Australian Model Engineering

July-August 1997

Issue 73

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LOCOMOTIVES, TRACTION & STATIONARY ENGINES, BOATS, WORKSHOP, PRODUCTS, CLUB NEWS & EVENTS, REVIEWS

In This Issue:
- ☑ The 1997 AALS Convention Party at Cobden
- ☑ Full listing of Australian & New Zealand clubs
- ☑ The Model Engineer's Lathe

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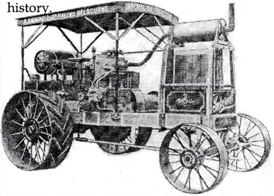

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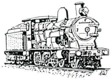

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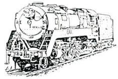

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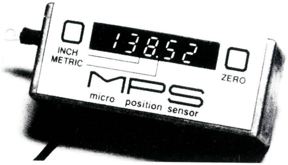

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The Cover

John Wiggins attends to the fire as he waits for the all-clear to take out the official train at the Cobden Convention. If you missed the Cobden party, or want to re-live it, turn to page 28

Photo: Brian Carter

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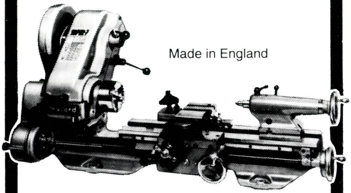

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Comment

A Concept...

The year: 2027... the place: anywhere in Australia.

Picture this:

"Dad, have you ever seen a steam loco?" asks a young boy to his father who was looking through one of his grandfather's old railway books. "No son, it's old technology that died when I was very young". Or...

"Dad, have you ever seen a steam loco?" asks a young boy to his father. "Sure son, funny you should say that, because I've booked us on a trip hauled by two steam locomotives! The train will take us away for a couple of days out in the country".

In thirty year's time — only one generation — one of these scenarios could take place, which one?

Despite the valiant efforts to date, Governments are finding it increasingly difficult to fund major projects like steam locomotive restoration. Consequently the present situation is not so rosy for restoration museums and the decaying exhibits. Without operating mainline locos, their revenue raising capability is severely handicapped and without revenue they can't keep the steam locos going — it's a vicious circle! So where is this leading?

There was some turntable talk at a model engineering club recently that could make the second scenario a reality, no matter which state or country you live in.

Several modellers were eyeing off a fairly new model steam loco of a type that was very popular as a prototype. One person wondered if there will ever be a full-size version riding the rails again. Another mentioned it may be possible, but not without a great deal of money. Then the talk expanded to other locomotive types and how much it would cost to bring them back to life.

The concept of model engineering clubs "adopting a loco" at a rail museum was raised. Both to ensure that model live steam locomotives continue to develop from contact with the "real thing", and to see that active exhibits of this period of locomotive development are not lost forever.

The concept is still in general terms, but could operate like some zoo's do to continue upkeep of their animals. The basic idea is for rail preservation museums to list a few locomotives that need repair to operating condition. The clubs who were willing and able could donate a small part of their income to a fund towards the restoration of a locomotive on the list. Special fund raising days, or member donations, or a percentage of revenue are just a small sample of fund raising possibilities without creating more of a financial burden than already exists. The clubs in each state could support their own state's presevation groups.

Initial contact with a NSW restoration group was very positive — a couple of NSW mainliners could be on the tracks again for about $30,000 each. For an individual, it's a lot of money. For a club, or better still, collection of clubs, it wouldn't take very long to achieve. A lot of model engineers gain pleasure from reliving the days of steam. Wouldn't it be good to allow future generations the same privilege.

I think it is an exciting concept that would go a long way to securing a realistic future for rail preservation groups. How about letting us know what you think of the concept.

Long live steam!

Brian Carter

To our new reader

If this is your first issue of Australian Model Engineering, welcome! We hope you'll look forward to the ideas, news and camaraderie in each bi-monthly issue.

One of the great things about our hobby is the way model engineers actively help each other. Unless you live in an isolated community, you'll soon discover who has valuable experience in your field of interest, or who will help you to make a part that's too big for your workshop machinery. Look in the *Club Roundup* section to find a club that's near to you; pay a visit and you'll usually find model engineers who live not too far away. Then you can experience the great fellowship that makes our hobby special.

This magazine is prepared in the same spirit of "model engineers helping each other". About two dozen people put many hundreds of hours work into each issue — all on a voluntary basis — to help model engineers in Australia and New Zealand keep up to date and stay in touch.

We rely on our readers to write articles for us — for the same (non-existent) rate of pay! If you have ideas or techniques that you feel would be interesting to others, please drop us a line. We'll gladly help with preparation of artwork or editing if that's necessary. Most important of all, please support the people who advertise in our magazine. Without them to pay the bills, you wouldn't be reading this!

Brian Carter

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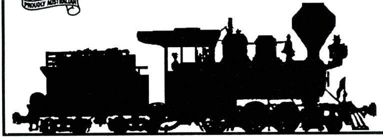

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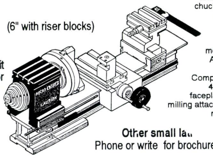

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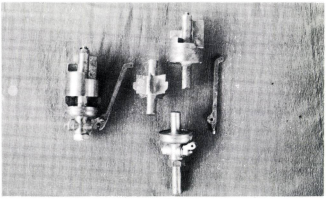

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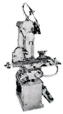

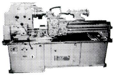

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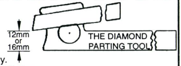

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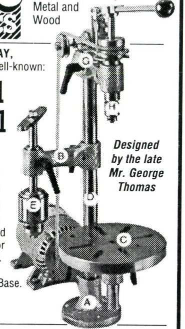

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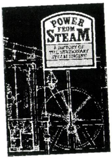

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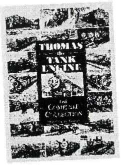

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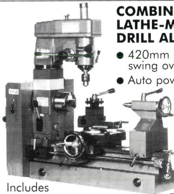

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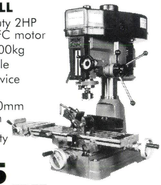

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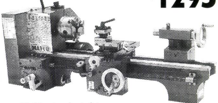

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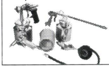

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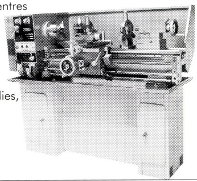

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ME797

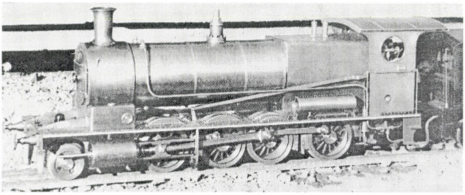
5201 — 21 Years On

by Barry Potter

Photos by the author unless otherwise noted

The Easter convention at Cobden 1997 was a milestone in the service life of my 5" gauge steam locomotive No. 5201. The 50, my wife and I attended theCobden convention and a very good show it was. We dragged some scale wagons around the 1.2 km of track and generally got in everyone's way. Some friends and I (apologies to the Bods that missed out) wet our whistles around the steaming bay on the Sunday and toasted the old girl's birthday — the engines not my wife's!

5201s first run was the Saturday before Easter 1976. The convention that year was at the West Ryde grounds of the Sydney Live Steam Locomotive Society which was my home club at the time. The engine was not quite finished and ran with a borrowed tender but as it was my first attempt at 5" gauge — I just couldn't wait to try it out.



5201 strutting its stuff at its first public outing at the 1976 convention at West Ryde NSW.
Photo: Reg Wood Snr.

The inspiration

The prototype which inspired me was the 201st member of the NSWGR D 50 class 2-8-0 goods locomotive No. 5201. There were 280 50s built, most of them were built as saturated engines. Many were superheated over the years but several remained in almost original condition to the end of steam in NSW: including 5201.

I had been constructing live steamers for several years and had built one O gauge and three 3½" gauge locomotives. The West Ryde club introduced me to 5" gauge and when I experienced the difference in operation I just had to have one! My club membership began in 1972 and construction began in 1973.

A young Barry Potter enjoying 5201, two years on, at West Ryde in 1978. The second engine, a NSWGR 30T, 3075 was driven by M. Haynes.
Photo: Australian Photographic Agency

The research

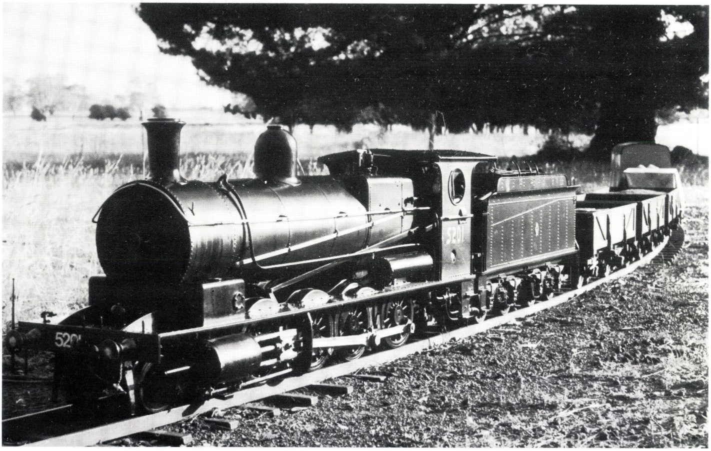
A very nice photograph and the availability of suitable castings were the main reason for launching into construction of this particular machine. The only drawings available at the time were the full-size frame and general arrangement drawings which had to be obtained through the railway archives. The last 3½" gauger that I had built was a model of a NSWGR 24 class 2-6-0, I had designed it myself and it was a very good performer, I felt reasonably confident that I could complete the 50 class without too much trouble. No drawings were made and all mechanical details were worked out from the GA. They were supplemented with photos and dimensions taken from a preserved example that was in the care of the NSW Rail Transport Museum.

Scaling from photos

A fellow club member was a dab-hand with a camera and took several photos for me. A piece of white painted wood a foot long was placed in a prominent position in each shot. As said fellow member also had an enlarger he was able to enlarge each photo to scale size using the piece of wood as a guide. The chosen scale was 1⅛" to the foot so it was a sample matter to enlarge each photo so that the stick was exactly 1⅛" long. "Hey presto" a print the right size for my requirements. Several other SLS members had also chosen the 50 class to copy so there was plenty of encouragement to be had and the chips began to fly.

Construction begins

My workshop equipment at the time consisted of a 4¼" new Gregco lathe a Fidax bench drill and a bench grinder. I had no milling gear so a makeshift vertical slide was rigged up on the lathe for those jobs that could not be machined any other way. The frames are about four feet long and quite a complex shape on both the top and bottom. They had to

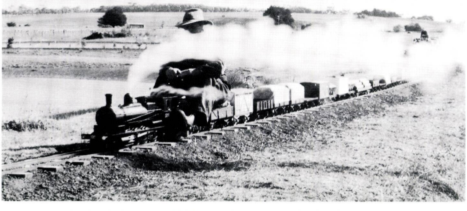


A nicely staged photo of 5201 and typical load at a private track circa 1993.

be cut from plate with a hand-held hacksaw and then hand filed to finish. The work was done during mid-summer and was a long and tedious job. Next followed the pony truck, wheels, cab, smokebox, running boards, motion etc. Progress was steady as I find that the only way to get any job done is to stick at it and try to do a little each day. It doesn't matter if it only means drilling a few holes or marking something out, it keeps up your interest in the job and you can see the project growing. Generally I get the frame on its wheels then fit the smokebox, running boards, cab and boiler shell. This gives the general outline of the engine and the work can be done fairly quickly. Even though it is only a hollow shell it looks like an engine and gives me the incentive to fill in the holes. It can be so easy to take a break for a few days and before you know it those few days have turned into a few years.

Allen valve gear

Allen straight link valve gear was fitted as per full-size and was virtually a direct copy of the full-sized gear. I made a few minor alterations to it to try to increase the valve travel but I doubt wether it was any improvement. The original designers knew a lot more about it than I ever will so in future I will stick to the original with no modifications. Cast iron cylinders fitted with proper rings were used and brass slide valves made to suit generous port openings. Suspension was taken care of with the usual coil springs. A simplified arrangement of hand and stem brakes completed the running gear.



A full head of steam as 5201 nears the summit with a local pick up goods.
Barry Potter driving his scale train at Cobden conventiuon.

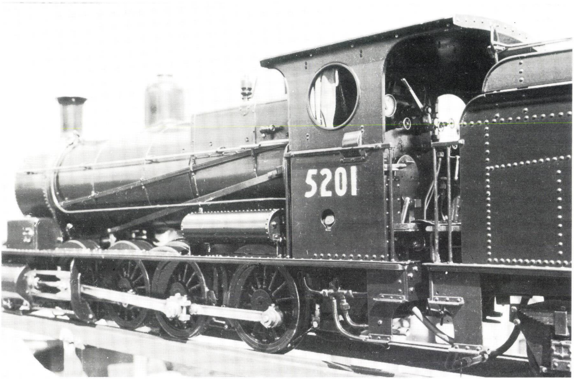
Photo: Hugh Elsol

A slightly different construction project

No real problems were encountered during the construction with the exception of the needs of a new baby daughter. Early in the construction period she used to lie in her basinet beside the bench while I attempted to get something done. As the engine grew so did she. By the time that the job was done she was four years old and had a fetish for banging nails into any piece of wood that she could find. The workshop looked like a porcupine zoo with nails sticking out of everything! Every box that entered the household had wheels nailed to it and a handle on one end. At 25 years of age she is still much the same although her creations are now strictly feminine and beautifully crafted.

The boiler

The copper boiler was an interesting exercise being of the belpair type with a 6" diameter barrel. The original engine was not superheated but I decided to tit one to the model so allowances were made in the tube arrangement for a three element spear head superheater to be included. The standard saturated smokebox was retained as that was one of the features of the prototype that I particularly liked. A CIG Colt 22 oxy outfit was purchased for the job and all of the boiler work was done using the cutting tip. As I wanted the outer firebox to be flush with the barrel on the top and the sides, a double flanged throatplate was essential (flanged forward to fit inside the barrel as well as flanged toward the back to fit inside the outer firebox wrapper). This was a rather tricky exercise but turned out well after a great many annealings and a great many hammer blows. Wooden formers were used for all of the plates and I was well pleased with the results. The working pressure is 90 psi. and as the plates are quite thin by today's standards, this meant lots of stays. At the end of the job I counted the 630 stay ends that had to be silver soldered! Funny how some things stick in your memory. There were only a few small leaks around some of the stays. These were easily fixed and the job was completed without any soft solder being used at all.

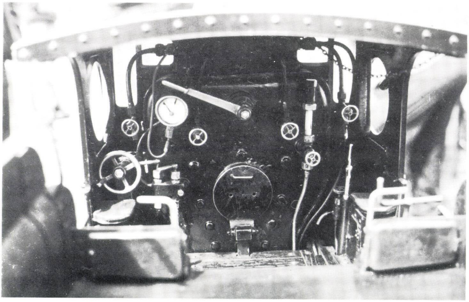


5201 awaiting its next call of duty at Cobden.

Photo: Brian Carter

Ready for the road

By Easter 1976 I was ready for the first trial run. It all went pretty well as planed except for a couple of hiccups with some unsuitable materials. I had made the piston rods from stainless steel and the stuffing boxes from mild steel. These two materials, I was to learn, do not go together, and resulted in a couple of seizures. I never made that mistake again. These problems over, the engine developed into a very reliable and truly delightful machine to own and drive and I have never been disappointed in its performance. The finishing off process which included making the tender, took another nine months or so and I was well satisfied with the final result. Galvanised steel sheet was used to make the tender tank. This proved so successful that it has become my material of choice for nearly all subsequent jobs. The main thing to remember is to sand the outside of the sheet very thoroughly before any riveting is done. This removes the galvanising marks and gives the paint a good key. I never use any solder on steel tender tanks as sooner or later it causes rust to form somewhere. The rivets hold it together and caulking is done with bituminous paint.



A close look at the well finished cab layout and locomotive controls.

Photo: Brian Carter

Wheel standards

During the construction period I was not told about the club's wheel standard (which was later to be adopted by the AALS) and so the wheels were profiled to the English dimensions. This resulted in a few problems with points from time to time so a decision was made to modify the wheels. They were removed and fitted with correct profile steel tyres. 21 years later they show no signs of wear and look as if they will go on forever.

Details and finishing off

Over the years some extra detailing work has been done to keep her up-to-speed with all of the other beaut NSW engines that have arrived on the scene and when she was 12 years old she had a light overhaul. There was not a great deal to be done with the exception of the axleboxes on the rear axle. They are right under the firebox and really take a pounding. There are no hardened parts used at all, all bearings have soft pins and either bronze or cast iron bushes. The little end pins and bushes are the exception having since been fitted with hardened components of as large a diameter as possible. I renew the side rod and big end bushes, and any other bits, as required, and make sure that there is no side slop in them. I can't stand rattly engines. The paintwork has stood up pretty well although some parts were repainted during the overhaul. The paint is a quick drying satin enamel with two coats sprayed over a good quality automotive etch primer.

Ever since new I have used the steam in the boiler to steam clean the engine down at the end of each running session. In the early days there were many dire predictions of water marked bearings and grit being washed into the works etc, but none of these have ever proved to be a problem. I get good life from the bearings and a nice clean engine is a joy to behold.

The one main problem that I have experienced with the engine is the result of the two centre sets of driving wheels having no flanges. If one of the front drivers derails the whole engine comes off the track. This has resulted in some truly spectacular derailments. A front skid bar to protect the drain cocks was fitted soon after entering service.

A train of thought

The builders of the other 50s unfortunately were all side-tracked and my engine remained alone for several years. Ironically since I have become a so-called professional model maker I have been requested to finish all of the others and we now have a nice little fleet of freighters. In NSW it has become popular to construct goods wagons and to run scale trains. When a number of us get together we can assemble some formidable trains and these are great fun to drag around. Double and triple headed scale trains are common and have created a whole new dimension to the hobby.

When 5201 was fairly new it was usual to hold efficiency trials from time to time and this gave me the opportunity to try her out with big loads on extended runs. On one of these runs we managed to haul a load of 3720 pounds at a steady nine miles per hour for the allotted time of 25 minutes. This was managed without to much trouble and although I didn't win, it was well worth the effort and great fun.

Cheers! 21st birthday celebrations at Cobden.
R to L: Joe Huntley, Neil Campbell, Bernie Courtenay, Barry Potter and Paul Coles.
Photo: Hugh Elsoi

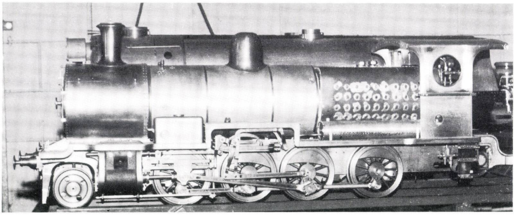
A diversion

In 1988 I was contracted to build an engine for the opening of the new Power House museum. For reasons beyond my control it was not possible to complete the job in time and the museum officials accepted my offer to loan them 5201 to fill the space until such time as the new engine was completed. It spent some time on display but to my disappointment they had to leave the tender off as it would not fit into the case with it on. Incidentally by this time I had built myself a NSWGR 59 class 2-8-2 and it filled the gap while the 50 was away. The 59, being the new toy, became the engine of choice for the next several years while the 50 sat in the corner gathering dust. I had cleaned it up fairly well for its stint in the Power House and I was reluctant to get it dirty. I decided to take it to the last convention at Tullamarine and so packed it up along with some scale goods wagons and away we went. It had been some years since I had used it and as a result had forgotten what a good engine that it was. It was a funny feeling, it was like re-discovering an old friend

A couple of years ago we moved house and there was a need for some extra cash, and the very reluctant decision was made to part with the 59. I was very sorry to see it go and started to look around for a suitable replacement. As we get older the larger engines get harder to handle so an engine about the same size as the 50 would be convenient I thought.

A new loco

A NSW prototype was a must and outside valve gear was preferred. A shortish tender so that I could sit behind was essential. Tall chimneys are friendly. It had to be Australian designed and built. The only prototype to fit this criteria is the southern valve geared 55 class. It's just another 50 with the gizzards on display. Thinking about it I decided that it wouldn't be a bad idea to have an example of the first and the last of the standard goods designs. 5201 is representative of the early form of saturated engines and 5507 (the number that I had decided on) would represent an example of the rebuilt and modified 55 class that were the last of the 2-8-0s. It would also fit into my existing transport boxes. A start has been made and the engine is now about 80% finished. No work has been done on the tender as yet.



5507 taking shape. Note the Southern valve gear.

A new beginning

When the 55 is finished I intend to pull 5201 down for a thorough rebuild which will include as much more detail as I can reasonably fit. There are a few things that have irritated me since the start and the opportunity shall be taken to rectify these. 21 years is a long time although It seems like only yesterday that I struck the first match that set her on the long long road to the inevitable great scrap heap in the sky.

The Model Engineer's Lathe

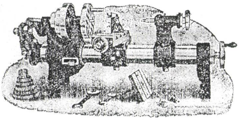
By Don Payne

In these days when there is an ever increasing variety of Taiwanese and Chinese lathes coming onto the Australian market in the smaller sizes it is interesting to take a step back in time to examine the proliferation of model engineer lathes that were available between the First and Second World Wars.

Australian lathes with which we may be familiar included the sturdy 4" Gregco gap bed lathe marketed through H.P. Gregory while McPhersons competed with the 4" x 2'10" gap bed Macson lathe. A larger lathe was time Purcell/Visby made in Auburn NSW while in the smaller range there was the twin round bar bed Hercus from South Australia, the Advance and the imported 3" screw cutting, back gear Myford (with gap bed) available in 1937 for seventeen pounds cash or 7/- per week. The 4" New Gregco was then available at £32.10.0 (Aust.).

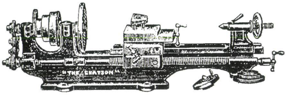
Before the Second World War most small lathes were treadle or hand driven and a very interesting treadle lathe was marketed in 1937 by A.B. Smith and Gluyas of Clarence Street Sydney which was a combination precision lathe, milling machine, grinding machine and drilling machine. The belt system to the overhead drive from the treadle was awesome.

However, if we turn to early issues of the English *Model Engineer* the variety and sizes of lathes available in England seems never ending. Probably the most popular was the pre-war round bed 4" Drummond but a lesser known but fine machine was the 3½" gap bed Drummond treadle lathe. It is interesting to note that in 1926 the English price for the 4" round bed Drummond complete on stand with treadle was £26.10.0. At the other end of the range was the Aird screw cutting and self acting hand driven lathe for a mere £4.5.0.



The 4" round bed Drummond Lathe

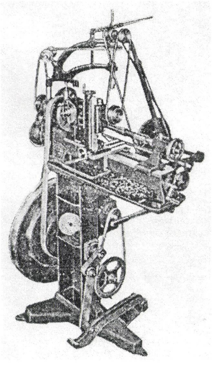
An excellent machine for treadle and electric drive in the larger size was the Brittania 4" FI type by the Britannia Lathe and Oil Engine Company, while the Rolls Royce of lathes (so advertised) were those by Henry Milne in 4", 4½", 5" and 6" sizes for treadle or power drive.



The Grayson 3" lathe.

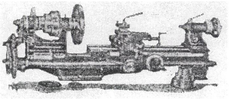
Ellis and Reed of Wisby, Bradford produced two lathes. One was a 4" centre, screw cutting lathe, 18" between centres, three pulleys for 1½" flat belt, faceplate 9¼" diameter, swing in gap 11½" x 2½", spindle nose 1⅛" bored No.2 Morse taper, back geared. The price in 1926 was £14.10.0. The smaller lathe was a 3" plain lathe at only £1.5.0 as a bench lathe or £3.0.0 with stand, tray and treadle. Spindle was ¾" on bearing. The nose was screwed ⅝" x 11TPI and bored for taper centres. It had a 3-step pulley grooved for 5/16" round belt and was 13½" between centres. Another bargain was from Kay and Co. of Sheffield who at 42/6 could supply you with a 3¼" centre gap bed lathe with "material, workmanship and design of the highest class" to the following specification:

- **Bed**: 26"long, cabinet benchlegs.
- **Fast Head**: Three speed Vee cone for ⅜" round belt. Diameter of large cone 4½", hole through spindle ⅜", ball thrust race, spindle 1" diameter at front neck, adjustable bearings and thrust, centre hole No.1 Morse taper.
- **Loose Head**: American type, sliding hollow barrel with latest type of locking arrangement.
- **Swing In Gap**: 10½" diameter
- **Hand Rest**: Usual extra strong
- **Equipment** : Catch plate, slotted face plate. 2 cast steel centres.



The precision Lathe, Milling, Grinding and Drilling machine from A.B.Smith & Gluyas

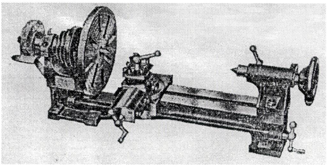
The Wren Tool Company marketed in 1924 at a special price of six pounds a 3" centre x 24" gap bed lathe with Vee edges swinging 8" in the gap and taking 14" between centres. It was complete with fully compounded swivelling slide rest and square thread left hand lead screw slide rest screw and tailstock screw.



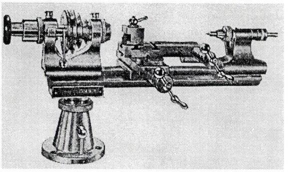
"Greco" 3¾" S.S & S.C Lathe with power drive from H.P Gregory & Co.

Other lathes

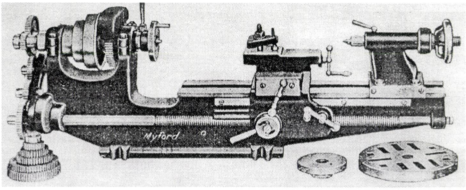
- Sundale lathes by the Selsun Engineering Co. Ltd.
- 2¾" screwcutting lathe by Humpage, Thompson and Hardy
- 2⅛" Eclipse Lathe by Enox Works, Greenwich
- 4" Eta Lathes by Eta Tool Co. of Leicester, marketed in two types:
  "X" for the man who can afford the best and the Eta Economic type for the man who wants the best that limited funds can buy.
- 3" Stanhope by Stanhope Engineering Co., Bradford.
- 4½" Barnes lathe.
- 2¼" Wellington with 20" bed, hollow mandrel, compound slide rest, six collet chucks taking up to 5/16".
- Edgar; Holbrook; Fulswyng; Relmac; IXL; Heath; JR 3"; Goodell-Pratt; 3" Ideal;
- George Adams in a wide range of sizes and types.
- Holmes; Supreme; Aimarco; Vershoyle; Vulcan; Colchester; Little Goliath; Melhuish.
- Odell 4⅝" centre lathe with worm feed by Turner and odell
- Wellingborough: South Croydon.



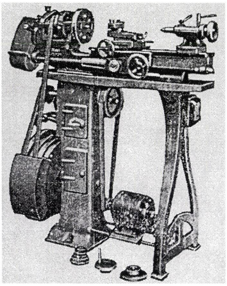
2½" centre lathe with built-in grindstone from the Grindturn Engineering Co.



"Ime" precision lathe from Ideal Machine Tool & Engineering Co. Ltd.



The first "Myford" supplied by The K.D.C. Mfg Co. Sydney.



The Portass 3½" Dreadnought lathe.

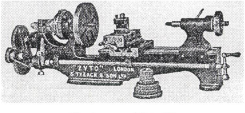
- Grigg 3" screwcutting lathe by Grigg Limited.
- 2½" "David" 6" between centres, compound slide rest, ⅜" hollow spindle, No.1 Morse taper and lever tailstock by Irwin and James, London.
- Patrick lathes in sizes from 2" to 5½".
- EXE 2½" screw cutting lathe by Exeter Tools and Machinery Ltd., Exeter.
- Abwood 4¼" lathe.
- Hobbies Patent Free Wheel Lathe (with chain drive between treadle and flywheel to give speeds from 70-2,500 r.p.m., all geared headstock).
- 4½" Billing.

A popular lathe of 1929 was the Improved Zyto TR by S. Tyzack and Son Ltd., London which had the following specifications:

Height of centres: 3";
Between centres: 12";
Height from gap: 3¾";
Height from saddle: 2½";
Hole through mandrel and tailstock: ⅜";
Centres: No.1 Morse taper;
Leadscrew 10TPI;
Change Wheels: 11;
Tumbler Reverse;
Back-geared;
Slotted table;
Price: £8.2.6.
Compound rest model, extra £1.10.0.

The quality range was immense and this is demonstrated by a George Adams advertisement of 1929. This firm marketed a wide range of lathes of very competitive prices from a small watchmakers lathe, two precision lathes to various hobby lathes in the popular sizes up to 5½" under the G.A. brand. The smaller GA 1½" Precision Lathe with draw spindle for split chucks (collets) and with a 10" bed was 70/- and 62/- extra for a slide rest. Compare this with the Adept 1⅝" (plain bearings) which was one pound, complete with a compound slide rest which was a very creditable baby lathe on which a seventeen year old made a Stuart No.10 vertical engine using the lathe and hand brace only. The other precision lathe by George Adams was 2½" centres with a 20" bed and the largest lathe was a 5½" screwcutting bench lathe, 21" between centres.

A more sophisticated precision bench lathe around about 1924, was the Benson manufactured in two sizes: 2½" and 3¾" centres and was mainly used in instrument shops, laboratories, toolrooms and better class repair shops. The firm of William Benson was founded in 1855. Some very fine milling accessories were made for the Benson lathes.



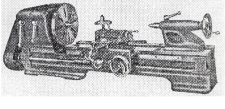
The Improved Zyto TR by S. Tyzack and Son Ltd

"A sturdy lathe, built to last" was the description given to the 3" and 4" Pools Special from the Pools Tool Co. Ltd. of Nottingham and both were very sturdy gap bed lathes. The company also marketed a small bench milling machine and a ⅜" sensitive bench drill.

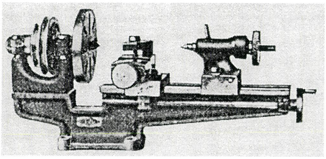
Just 6/- down and nine monthly payments would get you a Portass 2⅛" lathe or perhaps the Brownie 3½" bench lathe by Brown Bros. of Accrington, Lancashire, would suit your budget at 25/- with foot treadle at 35/- and compound rest at 15/- (1929).

The J.R. lathe by Jackson-Rigby Engineering Co., Shalford, Surrey was featured by Model Engineer as "well known as one of the best finished and suitable machines offered for the use of model and small power engineers." (ME Exhibition Review. 1924).

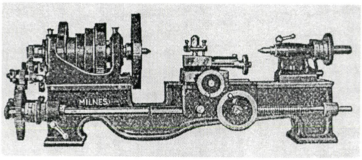
Cheltenham Works Limited, Brixton exhibited the Relmac, Super Relm and Relm



"Hobson" touted as the sturdiest 3½" precision screw-cutting lathe in the world! From Victa Engineering Co.



The Flexispeed 1⅝" centre lathe from the Flexispeed Machine Tool Co.



"Milnes" advertised as the Rolls-Royce of small lathes. From Henry Milnes.

Minor lathes. "The last mentioned, a 3" single geared lathe with semi-cantilever gap bed has a capacity of 12" between centres and is one of the stiffest built small lathes that we know of". "The new feature of this exhibit was the first appearance of a miniature machine called the Relmbee. the latest edition to the series. This is 2" centre, single geared, bar bed sliding lathe. The castings are of an aluminium alloy, and the bed of solid square bright steel bar, about 1¼" side, set diagonally, vertical and horizontal, thus giving the advantage of maintaining vertical alignment of heads."

The BTC Supremes 3" gap bed screw cutting lathe by Billing Tool Co., featured a ⅜" hollow spindle in headstock and tailstock, 7½" diameter swing in gap, saddle and compound slide rest tee slotted and 12" between centres.

There was also a Billing 4½" lathe with a feature of helical gears in tile back gear.

Stephen Greenwood. Waterfall Iron Works. Blackburn manufactured the Mark 2 High Grade Albert self acting screw cutting and boring lathe. It was 4¼" centre, 12½" between centres with a gap bed, ⅜" hollow spindle and set over tailstock.

From Wharfside Engineering and Toolworks at Whitby came The Pioneer 3½" all geared lathe. This very interesting all geared lathe had four speeds with all steel machine cut gear wheels in the headstock running in oil. No countershaft was required and the lathe was fitted with a fast and loose pulley for direct drive from the main shaft or treadle. It was fitted with a 4-way turret and a patent screw cutting device.

Lathes by Lineker and Winfield of Nottingham appeared to be good value with the Utility 2¾" gap bed lathe at 75/- (1926). It was 12" between centres, ⅜" hollow mandrel, ¾" Whitworth nose, No. 1 Morse taper, adjustable phosphor bronze bearings, machine slotted tables, set-over tailstock. Back gear and screwcutting was extra and raised the total price to £7.0.0. The Progress 3½" screw cutting lathe (£6.15.0) was 16" between centres, 3/8" hollow mandrel, 1" diameter bearings each 2" long and had adjustable machine slotted boring carriage, set-over tailstock and No. 1 Morse taper.

The Model Engineer for the 7th January, 1926 gave an excellent report on the hand operated 2½" Automatic: Sliding Lathe, the Damaco Five supplied by W.E. Hughes & Co., the lathe being of Danish make. Comment was made on its "complete nature". "It would be possible for anyone of ordinary capacity to get this lathe mounted and running within half-hour of its reception, providing he has a suitable bench standing on a fairly firm floor." Its capacity between centres was 8" and it had a fully compound slide rest on a saddle which travelled the working length of the bed. The driving gear was unique, commencing with a 12" hand flywheel, nicely balanced, and fitted with a handle for hand drive, a vee groove for power drive and an attachable crankpin for treadle drive. It had an all gear head from 1:1 to 5:2 and speed could be changed by a lever with the lathe running. It came complete with a 2¼" catch plate and a 2" 3-jaw lever scroll chuck with two sets of jaws. The automatic feed gave 1/336 inch per revolution of the flywheel on 1:1 gear but when in 5:2 up ratio the feed was 1/134 inch per mandrel revolution. A self contained simple treadle gear was supplied in the overall price of £7.10.0. A screw cutting version was £10.0.0 with 14 change wheels to cut threads from 6 to 120 TPI.

A very good small lathe which used a round bar bed was the Wade No. 2 back Geared, Self Acting Screw Cutting Lathe. It used aluminium alloy for all castings and came complete with 13 change wheels to cut threads RH or LH from 6 TPI io 60 TPI including Metric pitches. It was 2" centre and 12" between centres.

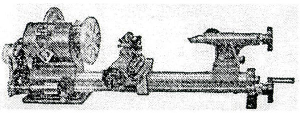
In 1927 an advertisement appeared in the English Model Engineer: "Warning to ME readers. The Portass 2⅛" centre lathe has been flagrantly copied almost to the last nut. Portass machines are easily distinguishable by reason of their superior workmanship and finish". This very simple lathe had been made by The Healey Motor and Manufacturing Co., Sheffield for many years and sold at 55/- including compound rest. There was also a larger 3" Portass back-geared and screw cutting lathe, 12" between centres and a Portass hand shaper. The copy would appear to be 2⅛" Eclipse by Enox Works, Greenwich which sold at the same price of 55/-

Yet another lathe in the small range was the Graves Patent Portable Lathe which had 2" centre height, 2⅝" in the gap. 6" between centres and a compound slide rest.

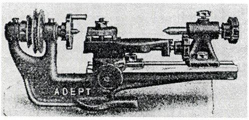
Unfortunately, the depression saw the demise of a large number of these excellent small machines while only a few survived afterthe Second World War such as Zyto and Adept, while others appeared such as the Grayson 3/2" by E. Gray and Son, the 5" Halifax, the 3½" Warwick, the3½" Perfecto, the 1¼" Flexi-speed and the 3¼" Rollo Elf with 3-speed Sturmey Archer geared head. The names appear to be endless and yet I have only touched on those machines in the range of the average home mechanic. There is another range in the specialist field, such as Pittlet, Ime, Pultra, Societe Genevoise, Boley-Lienen, Lorch, Carson, Starke, Lambercier, Hjorth, Mikron, MC Precision Lathes, Vidal Engineering Co., Wolf Jahn and Co., etc.

Ornamental turning was the hobby of rich gentlemen and the gentry and for this the fabulous unpronouncable Holtzappfel lathe was used with its multitude of attachments, fixtures, fitments and accessories, the turnings usually being in exotic materials such as ivory.

I wonder how many of these early machines still exist in grandfather's old tool sheds?



The Rollo Elf 3¼" screwcutting lathe from Barrmor Tool Works



The "Adept" 1⅝" centre lathe from F.W. Portass

Steam Chest

with Dave Harper

Hello again, steam fans, and welcome to another collection of steamobilia.

The Dave Sampson shuttle valve mentioned in the March-April 1997 Steam Chest seems to have caused quite a stir. It has been a four-way venture to prepare an article on what appears to be a bit of a breakthrough in valve design for small pumps.

Dave loaned his model to Chris Wilson, who stripped and measured it, and on his magic CAD computer prepared a set of drawings. These have been passed on to Dave Sampson for correction, and a final set should be produced in time for next issue, all 15 A4 sheets of them!

Meantime, Ken Saunders had seen the pump stripped down, like what he saw, went home and built one! It seems that Ken had a couple of problem pumps, and quickly realised the potential of Dave's crossover valve, as we are calling it now.

As a result, I paid a long overdue visit to Ken's place to photograph his version and to try and put in words the complex action of the valve. This proved a very enjoyable day, and led to an even better one when Ken invited me to go with him out to Grandchester where there is a 7¼"G model of a QR PB15 loco with a crossover valve fitted to the Westinghouse pump, which does duty as a boiler feed pump.

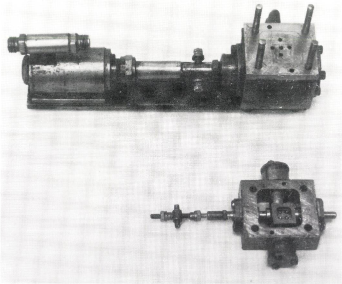


Photo 1.

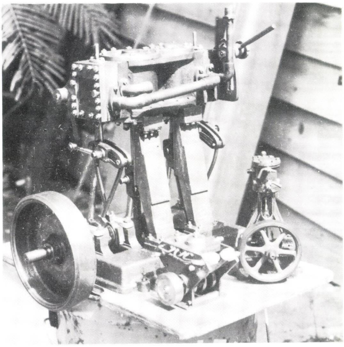


Photo 2.

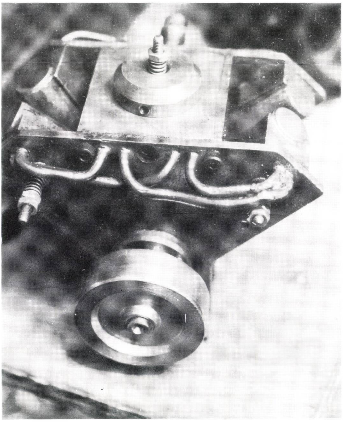


Photo 3.

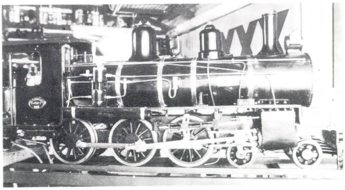


Photo 4.

As it happens, the model PB15 belongs to Jeff Gillam, son of Roly Gillam, who owns and operates the steam powered sawmill which is Grandchester's main claim to fame. Jeff also works at the sawmill, so I was able to make a long-awaited acquaintance with this local tourist attraction.

Just to round out the day, we detoured on the way back to look at the ARHS Rosewood railway, where I was able to snap the real PB15 plus a few other items of interest.

So, lets look at some photos... **photo 1** is Ken's Weir pump with the valve chest removed. (He had it off before I could get my camera out!) This will have to do to whet your appetites until we get the article finished!

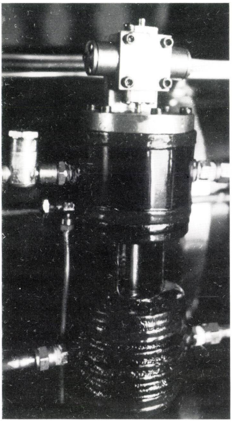


Photo 5.

Photo 2 shows a few of Ken Saunders' models, a neat compound launch engine, a Stuart V10 and a V4 oscillator which should interest the boaters.

Photo 3 shows the V4 with its rotary reversing valve on top. Typical of Ken's work, simple, effective and ingenious.

Jeff Gillam's PB15 is in **photo 4**, a very impressive model recently built by Ray Parrinder.

The crossover valve on top of the Westinghouse pump is in **photo 5**, it apparently works a treat.

Photo 6 shows Roly Gillam at the firebox of the ex-QR C17 boiler that powers his sawmill and also burns his sawdust!

A general view of the main sawbench driven from the lovely old Marshall horizontal engine via the usual collection of flat belts and layshafts is in **photo 7**.

The engine is unusual in that it has a Hartnell governor which operates an expansion valve on the back of the main slide valve. **Photo 8** shows it in action. Even when running a big log into the saw, the engine hardly pauses, so effective is the governor. The slow shutter speed required in the dim light under the roof at least gives a good impression of speed!

The real thing... ARHS Rosewood's PB15 poses in **photo 9**. Scouting around the sheds, Ken Saunders surveys a sad-looking C17 loco sans boiler in **photo 10**.

With a little help from my friends

In another shed we found Red Fred, one of the few remaining diesel railmotors that used to run on QR branch lines all over the state, **photo 11**.

Photo 6.

I have had a yen to build one of these railmotors to 5" G for a long time, with battery electric power and radio control! If anyone can put me onto a suitable motor and speed control, I'd be most obliged! The rest of it I can manage, with a little help from my friends....

Another model project we're looking at is a Cornish pumping engine. In one of Chris Wilson's books, Modern Steam Practice and Engineering, dated 1886, I found a whole section devoted to the Cornish engines, with full details of the complicated valve operating gear. This would be a fascinating project so long as we made it big enough, say with about a 3ft beam, so the valve gear could be made at

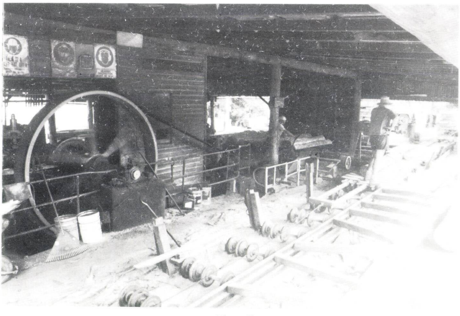


Photo 7.

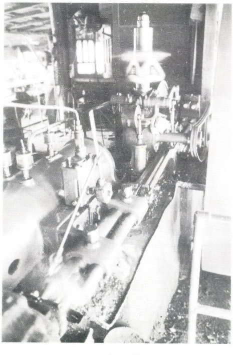


Photo 8

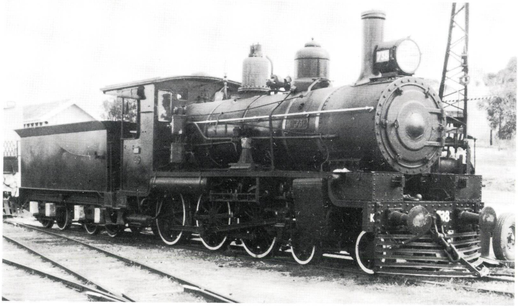


Photo 9.

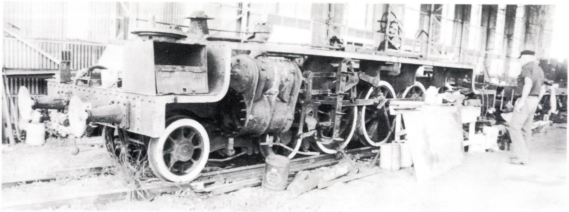


Photo 10.

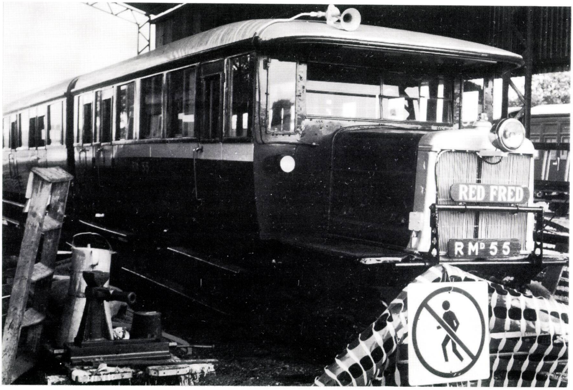


Photo 11.

least to look authentic. If there's any interest out there we may make a series of articles on the project.

Over the hills and far away

With any luck, by the time you read this I will have completed a two-week trip around Queensland with Ken Saunders, looking up all the steam engines we can find. One set that I've only recently found out about are the Hathorn Davey differential pumping engines at Charters Towers. A story and pictures on these unique 19th century engines would be a natural follow-on to the Spotswood engines by the same manufacturer, the article on which is well on the way!

One out of the box

Finally, here's a drawing (fig. 1) I found in my files, from I know not where, but it shows a neat vertical engine with what looks like an expansion valve driven by the second eccentric. It seems some of these were made to give adjustable cut-off, but could only be adjusted when the engine was stopped. It appears to be a drawing sent from the builder to a potential customer, dated April 27 1866, it shows what was state-of-the-art 130 years ago!

The manufacturers legend reads: *W Collier and Co, Engineers and Toolmakers, Salford, Manchester.*

There are no clues as to dimensions, but I'm told that the flywheel appears to be in two pieces, and under 6 feet diameter, they didn't usually bother doing that. It's also likely that the engine was available in a range of sizes and that the drawing is of one of many sizes. Whatever, it is interesting and could be the basis for an attractive model.

That seems to be it for this time, I hope to have all sorts of goodies to share with you over the next few issues, till then, happy steaming!

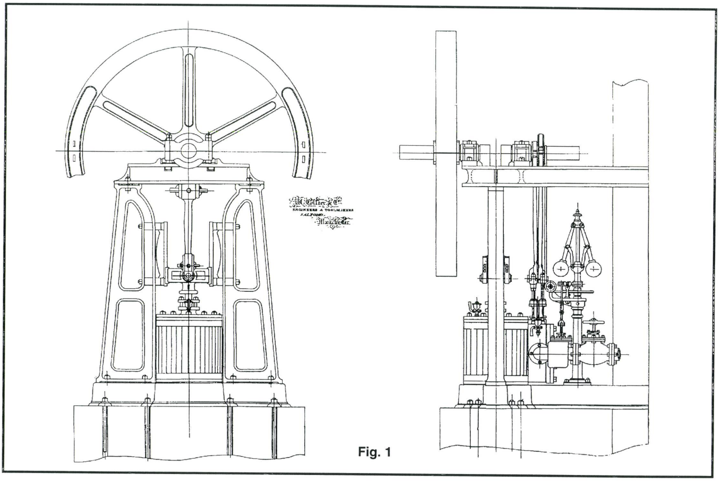


Fig. 1

⑧ Welding Rod Waterproof Storage

Shop Hints of Peter Dawes

This hint originates from Reg Harris of the Orange Society of Model Engineers who suffered a roof leak that nearly ruined a packet of rods. Reg made a handy canister out of spare plastic plumbing fittings to store his rods. 90mm diameter pipe takes up less space, but 100mm pipe holds more rods and gives better access for gloved fingers when withdrawing the rods.

Determining the sizes

For 300mm rods, cut a piece of pipe of the chosen diameter to a length of 305mm. Or cut the pipe to a length that suits the particular rod length you are using, whether it be 300, 350 or 380mm. The final internal length should be about 5mm longer than the rod. You may find that the free space inside the end of the caps will add the extra 5mm. The ends of the pipe should be reasonably flat and square.

There are two ways to close the canister:

- Glue a cap on the bottom end then use a second loose cap on the top to close it. This gives adequate sealing for most purposes, but for even better sealing use a screw-top, as follows:
- Glue a threaded adapter sleeve onto what becomes the top end — *first*. The adapter increases the overall length by many millimetres so you have to allow for this when measuring the tube. So glue the adapter on first then cut the tube to required internal length with its cap screwed on. Glue the bottom cap on last because it adds little or nothing to the internal length.

Dividers

A handy option is to divide the canister into two compartments for different gauges of rod. Cut a rectangle of flat steel, plastic, plywood or hardboard, for a gentle push fit in the inside of the tube. It should be some 30-40 mm shorter than the internal tube length to allow better access to the rods. Stand the canister vertically on the ground while welding to make the rods easily accessible.

Obtaining the parts

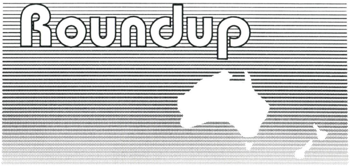
If you have to buy the parts new, a 100mm plain cap costs about $3.50 retail, the screwed sleeve plus screw cap cost about $8, and pipe costs $6.5 per metre.

To save buying a new pot of "blue" glue, most of which would ultimately be wasted because of evaporation of the solvent, get a plumber to glue the pieces with his currently open pot, or find a friend with a pot.

Strictly speaking, surfaces to be glued should first be brushed with a primer. Primer is a solvent based on acetone with pink colouring added. It "wets" and roughens the surface of the plastic to improve adhesion. For this job priming is hardly necessary.

The welding rod canister ready for use.

Club Roundup



compiled by David Proctor

Narara NSW

What an asset! Four years since the idea was first floated and now the Central Coast club has a clubhouse that will be the envy of many. There are some finishing touches yet to be applied but what they have is a brick building with storage underneath, Colourbond roof, showers, toilet facilities, including one for the disabled and a kitchen. The opportunity to be involved in a government sponsored employment training project was of immeasurable assistance, as was the ongoing support of the local council.

Various other projects are progressing. Jobs like preparing the wood for the trestle bridge through the swamp area and the ramp from the new steam-up bay' being just two. Members already have their sights on hosting a future Convention, and believe their facilities will be as good as any.

The club track proved to be a popular location during the lead-up to Christmas. With the venue hired out to different organisations for their parties, Santa was a busy man!

Central Coast Steam Model Co-op Ltd
Location: Lot 10, Showground Road, Narara
Public Running: 1st Saturday

Millswood, SA

SASMEE is 70 years old, a respectable milestone by any standard. Congratulations!

Members from several kindred clubs throughout South Australia joined the folks at Millswood for an interclub run on the Australia Day weekend. As usual this annual event proved to be most enjoyable. In February some 21 members donned their "good gear" and attended the 125th year of the City of Unley ball.

Club Roundup contributions

AME is pleased to receive club newsletters for consideration in this section. Newsletters are often a good source of articles, which we appreciate all the more, but most of all they help us keep in touch.

It is often difficult to decide what to publish and what to leave out. and the task of selecting material for a wider audience takes a lot of time. Also, there is always the risk that AME will publish something that the club considers sensitive. Please help by sending a "press release" page with your newsletter, or highlight the items you think we could use. We'll give first preference to clubs that help us out this way.

bmc

Just to prove that they are not socialites all the time, they now have the new multi-gauge points and associated colour light signals operating for the station loop at the northern end of the 7 1/4" track. As with all other points on the track they are driver operated.

South Australian Society of Model & Experimental Engineers Inc
Location: off Millswood Crescent, Millswood
Public Running: 1st Sunday & 3rd Saturday

San Francisco USA

Planning is already under way for the Fall Meet which this year will be on October 11 and 12. Live steamers from "down under", if you are in the area, take note and join in.

The higher than desirable oxygen content of the GGLS water supply makes its suitability for steel boilers questionable, but it has no effect on copper boilers. The club's Pacific loco is out of service while work is being done on it. Trackwork continues with two new sections of 3-rail installed on the ground level and five more sections ready to install.

Golden Gate Live Steamers Inc.
Location: Tilden Park, Loma Cantadas & Grizzly Peak Blvd., Berkeley. CA

Wollongong NSW

Much activity at the ILS. In the run up to Christmas members handled 16 Christmas Party bookings, which all goes to show what a popular feature the club is, not to mention the smile on the Treasurer's face.

The re-sleepering project is progressing well with the track gang lifting ten lengths of track before removing the wooden sleepers, grinding back the rust, fish oiling the steel sleepers and then fitting up new river red gum wooden sleepers before placing same on a new road bed.

A particular problem on track days is the sheer number of *Larus Novaehollandiae* better known as seagulls — and yes, they are protected. Not only do members clothes get bombed from above but the odd loco has also been redecorated and no food can be left unattended, even for a moment. The moral to this story is *don't feed the seagulls!*

As well as an ongoing maintenance program, more recently the workforce replaced the main power cable into the grounds with some super heavy duty stuff which will outlast the current membership! The job entailed digging a trench 70 metres long, 1 metre deep and going underneath 5 railway tracks. A working bee was organised to do the job along with 12 Members of the South Coast Vintage Car Club who were on hand and pitched in. By 4 pm the job was completed and it is pleasing to report that not only do we have power to burn but also enough to fire up our air compressor and provide compressed air at the steaming bays. The air valves located within the steaming bays are fitted with the quick change coupler of the JAMEC 310 type and in order to use same you will require a male fitting compatible with the JAMEC 310 series air valves. You've been told now! Our beloved green tin shed has seen better days with the white ants eating it out from around us and currently on the backburner are plans for a new club house soon! Unfortunately our Club Newsletter Mixed Goods has bit the dust as our printer has taken the early retirement. When a suitable replacement can be found we will be back in business.

Illawarra Live Steamers Co-op Ltd
Location: Stuart Park, Virginia St., North Wollongong
Public Running: 4th Sunday

Nelson NZ

The Boat pond has been emptied again in another attempt to reduce the weed. Since the introduction of the barley straw, algae has not been a problem, however it has given the weed somewhere better to grow. They are now trying to dry out the pond in the sun, with the hope that the weed will see the hole in the ozone layer and die!

Ongoing work continues in preparation for the new club house with relocation of the wooden club house and flag pole and some work on the sewer pipes. The finances are being organised and the architect is at work finalising the plans.

The frame of the control gates for the pond is in need of replacement with rust taking its toll. It is intended to fit new lock gates later in the year. The windmill vanes have been rescrewed, new ladders fitted and painted all round. Many of the trees first planted when the track was extended have been quick growing pines and are now overgrown and need reducing to allow native trees to grow. This is being done slowly so as to preserve the character of the track.

Nelson Society of Modellers Inc
Location: adjacent to Tahunanui Beach, Walkare St. Nelson
Public Running: Every Sunday

Paraparaumu NZ

Members of the PAM held their first ever open day on Sunday 9 February and it was quite a success. Visitors came from all six other clubs in the lower half of the North Island, bringing eight locos with them. Although the open day was officially on the Sunday, some of the visitors said they were going to make a weekend of it, "Like it or not". Everyone liked it! This was a good opportunity to try out the newly extended trackwork. The next open day is already planned for Sunday 30 November this year.

Paraparaumu Associated Modellers Inc
Location : Marine Gardens Railway, Raumati Beach
Public Running: Every Saturday and Sunday.

Galston NSW

Some interesting statistics arise from a Boiler Data Base of boilers which have passed through club boiler inspectors' hands. Since the end of November 1974, 192 boilers have been recorded, many of which have since left the club. Of those which remain, 46 have current certificates while 38 are out of time. From 1978 to the end of 1995, construction had commenced or approval given for 47 boilers which had not yet been hydrostatically tested. For 1996 this figure was 5. Given that this is for one club only, there must be a lot of steam operated models around the country!

A water sprinkler system has been installed in the gardens adjoining Rabbit Flat. Ground cover is being planted near the upper car shed and near the sandstone arched viaduct (similar to Zig Zag), which is being constructed by one member. Another scenic feature is to be a model Milk Siding erected at the approach to Rabbit Flat.

Hornsby Model Engineers Co-op Ltd
Location : 29 Mid Dural Road, Galston
Public Running: 2nd Sunday

Auckland NZ

Members of the Scale Marine Modellers attended the day sail in Hamilton in February. There were about 30 people there and nearly as many boats, only one of which was a steamer. This was the *Puke*, a model of a steam launch owned and operated by the Maritime Museum since 1989. The yachts had ideal conditions with the wind blowing towards the operators, the only serious problems being in the form of people fishing carelessly. How often do you catch a German pocket battleship like the *Scharnhorst* on your line?

Several readers would be aware, no doubt, of the TV series, Hercules. This is filmed mainly in New Zealand and at a recent meeting, club members were told about the huge 3000 year old Venetian Galley, built as a prop and tied up at the Auckland waterfront. Apparently it's not just roughly made, but built properly with full detail.

Scale Marine Modellers Inc
Location : Peterson Road Reserve, Waipuna Road, Panmure

Gisborne VIC

At last the authorities have given the Society approval under the Road Safety Regulations to register vehicles under the red plate scheme. All vehicles 25 years or over can be registered, including steam driven vehicles such as the Fowler.

Members have had a busy time socially. The new club banner was on display at the Ballan Tractor Pull, a good display was mounted at the Seymour Alternative Farming Expo and members attended the Picnic at Hanging Rock. There are several more rallies over the coming weeks.

Gisborne Vintage Machinery Society Inc.
Location : Steam Park, Webb Cres, New Gisborne
Public Running: 1st Sunday

Invercargill NZ

The building extension is nearly complete, insulation and lining out finished, floor painted, and wiring all done. The club's lathe has been installed and a wall built around it, providing a "tool room". A large bench drill is also being installed.

1997 sees the club celebrating its 60th anniversary (Congratulations!), and preparations are already gearing up for the Hobby Show in Riverton in November.

Southland Society of Model Engineers Inc
Location : Surrey Park, Invercargill
Public Running: Unknown

Wilson WA

The 1998 AALS Convention is only a few months away now and the Castledare folk are well on track with their preparations.

Caraboa, the club loco is now back at the club complete with name plates. It is now a WAGR MA class outline and in full Westrail orange livery. The club was able, during the year, to purchase diesel outline loco *Betsy*, as the result of a generous donation from the City of Canning. This loco has a historical value to the club having run there since 1964, and contributed countless dollars over the years.

Castledare Miniature Railways of WA Inc
Location : rear of 100 Fern Road, Wilson
Public Running: 1st Sunday

Tauranga NZ

Members recently went on a tour through the works of A & G Price in Thames. These heavy engineering works have over the years, among other things, been prolific builders of steam locomotives and rolling stock.

Back at the track, the work towards Expo 98 continues. Concrete has been laid to the Eastern end of the new tunnel and sleepers have been laid on the tunnel foundation, the bridge and 50 metres of track. The next part is the concrete foundation from the western end of the tunnel to the cross-over which has already been installed.

Tauranga Model Marine & Engineering Club
Location : Memorial Park, Tauranga
Public Running: Every Sunday.

Coming Events

5, 6 July
Bendigo National Exhibition

The Bendigo Society of Model Engineers are holding a national exhibition at the Leisure Centre, Kangaroo Flat. Organised by Events Bendigo. Further information from:
Peter Robinson (03) 5447 8667 or Events Bendigo, Stephen Cole, Phone: (03) 5444 4144, Fax: (03) 5443 4268.

9, 10 August
Blowfly Rally — Mudgee NSW

See Letter Box for details.
Contact: John Oliver (068) 45 2018.

23 August

AALS NSW Interclub Run at Illawarra Live Steamers. Virginia St. North Wollongong.

3, 4, 5, 6 October
9th National Miniature Traction Engine Rally at Walka Water Works

Maitland NSW is the place to be this October Labor day weekend.
Contact: Bob Neal (049) 32 8507 or
Peter Smith (049) 75 4548

10, 11, 12 October
Hornsby Model Engineers Annual Birthday celebrations.

Contact: Ted Gray (02) 9484 7583

11, 12 October
7¼ inch rail/traction engine weekend, Berry, NSW South Coast

Picturesque Berry Railway has 2 km of 7¼ inch gauge track, and meandering pathways for traction engines. Inquiries: Les Boyd on (044) 64 1304.

1, 2 November
Wagga Wagga Invitation Run

5" and 7¼"g track in scenic surrounds. Model traction engine track, Boats on the Wollundry Lagoon. HO gauge model railway.
Contact: David Font (069) 21 4762

8 to 12 January 1998
International Model Engineering Expo, Tauranga NZ

Model exhibition, hobby displays, working demos, road vehicles, railways 2½", 3½", 5" and 7¼" gauges.

Registration forms now available from:

Expo 98 Secretary, 326A Devonport Road, Tauranga NZ

10 to 13 April 1998
AALS Convention

Castledare Miniature Railway, Wilson, WA. Contact the club on (09) 356 2290

10 to 13 April 1998
South African National Steam Meet

Hosted by Durban Society of Model Engineers, Virginia, R.S.A.

Australia and New Zealand Club Listing

This listing has been sorted alphabetically by Country, State and Club Name (in that order). There's bound to be slight problems with the list but it is as up-to-date as we know it.

Club Secretaries please check your club's details for errors, or if your club is not listed, please inform AME as soon as possible.

Each entry has three dot-points following the club name containing the following information:

- Location of Miniature Railway
- Public running day
- Postal address

I was going to include a contact phone number but I don't have enough reliable phone numbers to make the list worthwhile. Office bearers change frequently, so does the contact number.

The list is usually kept up-to-date from information supplied by club newsletters. Unfortunately, nearly all of them *do not* contain basic information such as public running days, hence the many "unknowns".

Some clubs are listed as "No public running" but welcome visiting model engineers. The protocol is to write to the club first and arrange a mutual time for your visit.

Members of clubs with AALS insurance are reminded that they should inform their home club of their intention visit other clubs.

Australian Capital Territory

Canberra Society of Model & Experimental Engineers Inc.
- KINGSTON, Geijera Place
- Last Sunday
- PO Box 4462, Kingston, ACT 2609

New South Wales

Bankstown Steam Locomotive Society Co-Op Ltd
- BANKSTOWN, Ruse Park, Hoskins Avenue
- 2nd Saturday
- PO Box 24, North Revesby, NSW 2212

Bathurst Miniature Railway Co-Op Society Ltd
- BATHURST, John Matthews Sports Complex, Durham Street
- 3rd Sunday
- PO Box 574, Bathurst, NSW 2795

Berry Railway Inc.
- BERRY, B35 Princes Highway
- No public running
- 49A Strongs Road, Jaspers Brush, NSW 2535

Blue Mountains Railway Society Co-Op.
- BLAXLAND, Corner of Graham and Haymet Streets (Wascoe Siding)
- 1st Sunday - ex Jan.
- PO Box 20, Glenbrook, NSW 2773

Central Coast Steam Model Co-Op Ltd
- NARARA, Lot 10 Showgrounds Road
- 1st Saturday
- PO Box 692, Gosford, NSW 2250

Hornsby Model Engineers Co-Op Ltd
- GALSTON, 29 Mid Dural Road
- 2nd Sunday
- PO Box 172, Galston, NSW 2159

Illawarra Live Steamers Co-Op Ltd
- NORTH WOLLONGONG, Stuart Park, Virginia Street
- 4th Sunday
- 30 King Street, Heathcote, NSW 2233

Lake Macquarie Live Steam Locomotive Society Ltd
- EDGEWORTH (Newcastle), Off Velinda Street
- Last Sunday
- PO Box 40, Edgeworth, NSW 2285

Mudgee Miniature Railway Co-Op Society Ltd
- MUDGEE, Corner of Cassilis Road and Buckaroo Lane
- 2nd Sunday
- PO Box 946, Mudgee, NSW 2850

Orange Society of Model Engineers
- ORANGE, Matthews Park, Moulder Street
- 2nd Saturday
- PO Box 1485, Orange, NSW 2800

Pacific Coast Railway Society Inc.
- CASINO, Corner of Queensland Road and West Street
- 1st Saturday, 3rd Sunday
- PO Box 176, Casino, NSW 2470

Ridge Narrow Gauge Railway
- MANDALONG, Lot 11 Crooks Road
- No public running
- 10 Jewells Parade, Jewells, NSW 2280

Southern Highlands Model Engineers Inc.
- MOSS VALE — no track
- No public running
- C/o 44 Chapman Street, Moss Vale, NSW 2577

Sydney Live Steam Locomotive Society Co-Op Ltd
- WEST RYDE, Anthony Road
- 3rd Saturday
- PO Box 124, West Ryde, NSW 2114

Sydney Society of Model Engineers Inc.
- ST MARYS, R53 Luddenham Road
- Last Sunday except Dec.
- R53 Luddenham Road, St Marys, NSW 2760

Tweed Valley Miniature Steam Railway
- DURANBAH, Duranbah Road, Tropical Fruit World
- 2nd & 4th Sunday
- 2 Lansell Ave, Currumbin, NSW 4223

Twin Lakes Railway
- BUDGEWOI, Yellow Rock, Macleay Drive
- Unknown
- 13 Garnet Rd, Pearl Beach, NSW 2256

Wagga Wagga Society of Model Engineers
- WAGGA WAGGA, Botanic Gardens, Willans Hill
- 1st & 3rd Sundays
- PO Box 119, Mt. Austin, NSW 2650

Warringah Model Engineers
- No track
- No public running
- 155 Willandra Rd, CROMER, NSW 2099

Western Districts Live Steamers Co-Op Ltd
- FAIRFIELD WEST, Fairfield Showgrounds, Smithfield Road
- Every Saturday and 3rd Sunday
- PO Box 403, Mt Prichard, NSW 2170

Queensland

Bracken Ridge Central
- BRACKEN RIDGE, McPherson Park
- Unknown
- Unknown

Brisbane Live Steam and Model Engineers Society
- CARINA, Fursden Road
- 1st and Last Sundays
- PO Box 34, Red Hill, Qld 4059

Grandchester MLSA
- GRANDCHESTER, Ipswich St, (under construction)
- Undecided
- Lot 2 Gatton St, Grandchester, Qld, 4340

Logan Model Engineering Society Inc
- WOODRIDGE, Ewing Park
- 2nd & 4th Sundays
- PO Box 427, Slacks Creek, Qld, 4127

Mackay Society of Model Engineers Inc.
- MACKAY, Muller Park, Planlands
- 1st Sunday
- PO Box 5267, Mackay Mail Centre, Qld 4741

Model Engineers & Live Steamers Association - Bribie Island - Inc.
- BRIBIE ISLAND, Toorbul Street, Bongaree
- 3rd Sunday
- PO Box 170, Bribie Island, Qld, 4507

Model Engineers & Live Steamers Association - Gladstone
- Unknown
- Unknown
- PO Box 1112, Gladstone, Qld 4680

Model Engineers & Live Steamers Association Inc. - Maryborough Qld.
- MARYBOROUGH, Queen's Park
- Last Sunday
- 85 Odessa Street, Maryborough, Qld 4680

Model Engineers & Live Steamers Association - Rockhampton Inc.
- ROCKHAMPTON, Corner of Cambridge and Kent Streets
- Queen's Birthday weekend
- PO Box 1463, Rockhampton, Qld 4700

Queensland Society of Model & Experimental Engineers
- WARNER, Lot 5, Warner Road
- No public running
- PO Box 322, Everton Park, Qld 4053

South East Queensland Live Steamers
- MARSDEN
- Unknown
- 760 Brown's Plains Rd, Marsden, Qld 4132

Sunshine Coast Modellers Society
- NAMBOUR, Florence Street
- 4th Sunday
- PO Box 234, Nambour, Qld 4812

Toowoomba Live Steamers Inc.
- TOOWOOMBA, Awaiting relocation
- No public running
- PO Box 916, Toowoomba, Qld 4350

Townsville and District Society of Model Engineers Inc.
- TOWNSVILLE SOUTH, Boundary Street
- Last Sunday
- PO Box 90, Hyde Park, Qld 4812

South Australia

Adelaide Miniature Steam Railway Society
- PROSPECT, 370 Regency Road
- 4th Sunday
- PO Box 205, Prospect, SA 5082

Morphet Vale Railway Inc.
- MORPHETT VALE, Wilfred Taylor Reserve, Wheatsheaf Road
- 2nd & 4th Sundays
- PO Box 743, Morphett Vale, SA 5162

Penfield Model Engineers Society Inc.
- SALISBURY, Penfield Avenue
- 4th Sunday
- PO Box 792, Salisbury, SA 5108

Port Augusta Model Engineers Inc.
- PORT AUGUSTA, Homestead Park, Elsie Street
- 1st Sunday
- 61 Edinburgh Terrace, Port Augusta, SA 5700

Roseworthy Railway Inc.
- ROSEWORTHY, Roseworthy Campus
- 3rd Sunday
- Cnr Chamberlain & Harding Sts., Willaston, SA 5118

South Australian Society of Model & Experimental Engineers Inc.
- MILLSWOOD, Off Millswood Crescent
- 1st Sunday & 3rd Saturday
- PO Box 208, Goodwood, SA 5034

Tasmania

Evandale Light Railway and Steam Society Inc.
- EVANDALE, Rear of Falls Park
- Last Sunday
- C/o 36 Collins St, Evandale, Tas 7212

Hobart Miniature Steam Locomotive Society Inc.
- LINDISFARNE, Flagstaff Gully Road
- 1st and 3rd Saturday
- 22 East Derwent Highway, Lindisfarne, Tas 7015

Van Diemen Light Railway Society
- DON, Don River Railway
- Most Sundays & Pub hols.
- C/o Post Office, Don, Tas 7310

North West Model Engineering Society
- ULVERSTONE, Maskells Reserve
- 3rd Sunday
- 51 Alexandra Road, Ulverstone, Tasmania 7315

Victoria

Altona Miniature Railway Inc.
- NORTH ALTONA, Blenheim Road
- 3rd Sunday
- PO Box 387, Altona, Vic. 3018

Ballarat Society of Model Engineers Inc.
- WARRENHEIP, Dorrington Road
- No public running
- 4 Gracefield Road, Brown Hill, Vic. 3350

Bendigo Society of Model Engineers
- No track
- No public running
- Bendigo, Vic

BHP Western Port Railway Society
- HASTINGS, Denham Road
- No public running
- Private Bag 1, Hastings, Vic. 3915

Box Hill Miniature Steam Railway Society Inc.
- BOX HILL, Elgar Park, Corner of Elgar Road and Belmore Road
- 2nd and 4th Sundays
- PO Box 61, Box Hill, Vic. 3128

Campaspie Valley Railway Inc.
- ECHUCA
- Queen's Birthday weekend
- PO Box 151, Echuca, Vic. 3564

Diamond Valley Railway Inc.
- ELTHAM, Lower Eltham Park, Main Road
- Every Sunday
- PO Box 245, Eltham, Vic. 3095

Euroa Miniature Railway Inc.
- EUROA, off Turnbull Street via Hunter Street
- 4th Sunday
- 2 Nelson Street, Euroa, Vic. 3666

Geelong Live Steam Association
- GEELONG, Portable elevated track in use.
- No public running
- 38 Hazelwood Crescent, Leopold, Vic. 3224

Geelong Society of Model & Experimental Engineers
- GEELONG, No track.
- No public running
- PO Box 442, Geelong, Vic. 3220

Gippsland Model Engineering Society Inc.
- TRARALGON, Newman Park, Peterkin Street
- 4th Sunday
- PO Box 569, Morwell, Vic. 3840

Gisborne & District Steam & Engine Society
- GISBORNE, Webb Crescent
- 1st Sunday
- PO Box 99, Gisborne, Vic. 3437

Lake Hume Model Engineers Inc.
- WODONGA, Diamond Park, Lincoln causeway (Hume Highway)
- 3rd Sunday
- PO Box 1017, Wodonga, Vic. 3698

Melbourne Society of Model & Experimental Engineers
- No track
- No public running
- 11 Kirkwood Drive, Camberwell, Vic. 3124

Mooroolbark & District Miniature Railway & Steam Club Inc.
- KILSYTH, Kiloran Reserve, Hawthory Road
- 4th Sunday
- PO Box 231, Mooroolbark, Vic. 3138

South Western Model Engineers
- COBDEN, Operates at the Cobden Miniature Railway, Grayland Street
- 3rd Sunday
- 14 Peter St., Cobden, Vic. 3266

Spring Vale Live Steamers Inc.
- SPRINGVALE, Alex Nelson Reserve, Harold Street
- 3rd Sunday
- 110 Patty St, Mentone, Vic. 3194

Steam Locomotive Society of Victoria Inc.
- MOORRABBIN, 128 Rowans Road
- 1st Sunday
- PO Box 115, Moorrabbin, Vic. 3189

Tullamarine Live Steam Society
- Closed: new site under construction.
- 1st Sunday
- PO Box 107, Tullamarine, Vic. 3043

Victorian Miniature Steam Railway Society Inc.
- EDINGTON, McColl Street
- 4th Sunday
- 17 Lowndes St, Bendigo, Vic. 3550

Wandong Live Steamers Inc.
- WANDONG, Mateison's Siding, O'Grady's Road
- No public running
- 7 Felicia Grove, Forest Hill, Vic. 3131

Wimmera Live Steam and Model Engineering Society
- HORSHAM, Golf Course Road (adjacent to wool factory)
- Unknown
- 57 Churchill Rd, Horsham, Vic. 3400

Western Australia

Castledare Miniature Railway
- WILSON, Rear of 100 Fern Road
- 1st Sunday
- PO Box 337, Bentley, WA 6102

Katanning Miniature Railway
- KATANNING, All age play area
- 1st & 3rd Sunday afternoon
- 37 Amber St. Katanning 6317

Northern Districts Model Engineering Society (Perth) Inc.
- BALCATTA, Vasto Place
- No public running
- PO Box 681, Balcatta, WA 6021

South West Model Engineers Association (WA) Inc.
- BUNBURY, Forrest Park, Blair Street
- 3rd Sunday
- 10 Clifton St, Bunbury, WA 6230

Western Australia Model Engineer Club
- No track
- No public running
- PO Box 84, Gosnells, WA 6110

New Zealand — North Island

Auckland Society of Model Engineers Inc.
- PANMURE, Peterson Road Reserve, Waipuna Rd.
- Unknown
- PO Box 14570, Panmure

Hamilton Model Engineers Inc.
- HAMILTON, Minogue Park, 24 Tui Avenue, Forest Lake
- Every Sunday
- 51 Alderson Road, Hamilton 2001

Havelock North Live Steamers & Associates Inc.
- HAVELOCK NORTH, Keirunga Gardens, Pufflet Road, Hawkes Bay
- Unknown
- C/o 2 Ashford Place, Havelock North 4201

Hawkes Bay Model Engineering Society Inc.
- HASTINGS, Westshore Beach
- Unknown
- C/o 214 Ikanui Road, Hastings 4201

Hutt Valley Model Engineering Society Inc.
- PETONE, Marine Parade
- Every fine Sunday
- Marine Parade, Petone 6008

Maidstone Model Engineering Society Inc.
- UPPER HUTT, Maidstone Park.
- Unknown
- 95 Holdsworth Avenue, Trentham

Manukau Live Steamers Inc.
- MANGERE, Mangere Centre Park, Robertson Road
- Every Sunday
- Box 43-095, Mangere Town Centre, Auckland 1730

New Plymouth Society of Model Engineers
- NEW PLYMOUTH, Cnr Liardet and Gilbert Sts.
- Every Sunday
- 11 Gilbert Street, New Plymouth 4630

Palmerston North Society of Model Engineers
- PALMERSTON NORTH, Mariner Park
- Unknown
- 69 Fairs Road, Palmerston 5330

Paraparaumu Associated Modellers Inc.
- PARAPARAUMU, Marine Gardens Railway, Raumati Beach
- Unknown
- Box 296, Paraparaumu 6540

Rotorua Society of Model Engineers
- ROTORUA, Te Amorangi Museum, Robertson Avenue, Holdens Bay
- 2nd Sunday
- Box 7108, Te Ngae 7108

Tauranga Model Marine and Engineering Club
- TAURANGA, Memorial Park
- Unknown
- 326a Devonport Road, Tauranga 3001

Thames Small Gauge Railway Society
- THAMES, Thames Foreshore
- Unknown
- 43 Kauaeranga Valley Road, RD2, Thames

Wanganui Model Engineering Society
- WANGANU, 70a Alma Road
- Unknown
- 70a Alma Road, Wanganui 5001

Whangarei Model Engineering Club
- WHANGAREI, Tarewa Park
- Unknown
- 90 Otaika Road, Whangarei 101

New Zealand — South Island

Ashburton Steam and Model Engineering Club
- ASHBURTON
- Unknown
- C/o 34 Bathurst Street, Ashburton 8300

Canterbury Society of Model Engineers
- CHRISTCHURCH, 26 Andrew Crescent
- Unknown
- C/o 8 Parr Place, Christchurch

Gore Model Engineering Club Inc.
- GORE, Hamilton Park.
- Every Sunday
- C/o 20 Vera Street, Gore 9700

Marlborough Society of Model Engineers
- BLENHEIM, Brayshaw Park
- Unknown
- 8 Auther Baker Place, Blenheim 7315

Nelson Society of Modellers Inc.
- NELSON, adjacent to Tahunanui Beach, Walkare St. Tahunanui
- Every Sunday afternoon
- Box 2156, Stoke 7001

Otago Model Engineers Society
- DUNEDIN, Kettle Park
- Unknown
- Box 2613, Dunedin 9030

Picton Society of Model Engineers
- PICTON, Foreshore
- Unknown
- C/o 42 Waisau Road, Picton, 7372

South Canterbury Model Engineers
- CANTERBURY SOUTH, Anzac Square
- Unknown
- 238 Wai-iri Road, Timaru, 8601

Southland Society of Model Engineers Inc.
- INVERCARGILL, Surrey Park
- Unknown
- Box 216, Invercargill, 9530

Club Secretary's please check your club's details and let AME know of any variations and/or details of "unknown"

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AUSTRALIA.

Boiler “Handle”

by John Lyons

Photo and drawing by the author

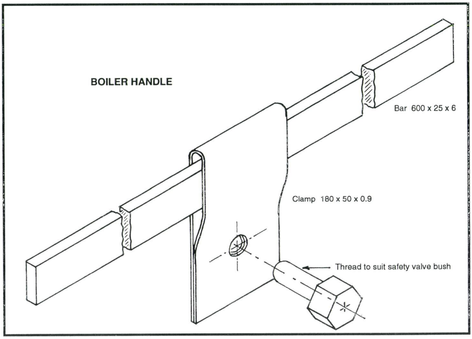
I recently finished a boiler for a 5" gauge NSWGR Z19 class locomotive. While this is not a large boiler by present day standards it still has a fair mass and the task of repositioning the boiler during the final stage of silver soldering was not going to be easy. The boiler had to be standing up on the front of the barrel in order to solder around the back head and then rolled through 90 degrees to lay on its top to expose the foundation ring for the last stage of soldering.

Coming to grips

I had started to make a pair of tongs, but as the boiler parts went together I realised that the tongs would be too light to safely handle the weight of the very hot, near completed boiler.

As I had fitted the threaded bushes for the boiler fittings in the outer fire box wrapper I considered that I could use one of these bushes and fasten a “handle” to the boiler and make the reorientation for the final operation a much easier task.

My first consideration was to find a suitable length of bar, drill a hole in the centre and fasten the bar to one of the safety valve bushes with a home made cap screw. This would work very well but would limit the use of the length of bar once the task was completed. To overcome this problem I used a piece of 1.6 mild steel plate to form a clamp to hold a plain piece of bar in place.



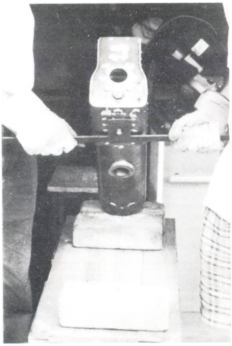
The plate 180 x 50 was folded as shown in the diagram and drilled $\frac{25}{64}$" diameter for the $\frac{3}{8}$" x 32 tpi cap screw made from a piece of $\frac{1}{2}$" hexagonal brass. A piece of black mild steel 600 x 25 x 6 was slid into place at the folded end and the device fastened to the boiler as illustrated in the photographs.

The handle in use

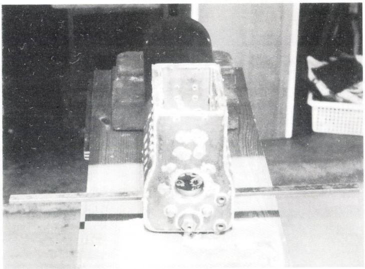
The boiler was set up for silver soldering and the required movement was trialed before heating began. Bricks were set up in position so the boiler would locate safely in its new place after rotation. I had some assistance during this final operation and with gloved hands the rotation of the very hot boiler was achieved with absolute ease when the time came. There was no damage to the soft copper, no risk of clamping actions on any part of the boiler and no chance of it rolling had it been a round top boiler. I think that the advantage would be even greater for a larger boiler

Foundation ring gaps

I had some small gaps to fill in the foundation ring and I used the following method. A number of $\frac{1}{16}$" copper rivets were annealed and then flattened. Before pickling, the heads were turned 90 degrees in relation to the stem. This allowed me to drop the flattened rivet into the gap with the head supporting it in place. The rivets had been fluxed before being put in place. I used three of these rivets and found that the silver solder flowed around them easily. The heads were removed when the boiler was cool.



The boiler being safely lowered into position for silver soldering the foundation ring.



The boiler in position for silver soldering — no “grip” marks on the outer shell from tongs or other gripping devices.

Blowfly Update

by Barry Potter

It is some years since the finish of the *Blowfly* series of articles and I think that it is about time for a review and up date of the general acceptance and performance of the design.

I have built ten engines to the general *Blowfly* design and have seen many others built more or less as per the published articles. Of the engines that I have built seven have been the standard 0-4-0 type, **photo 1**, and three were built as 0-6-0 variations. Of the 0-6-0s one, **photo 2**, was virtually identical to the four wheel version with the wheel base altered slightly to accept an extra axle and as an experiment I also fitted a 6" diameter boiler. The cab was unchanged but the tanks had to be ½" narrower to clear the wider boiler. The boiler was also fitted with a conventional dome shape with the safety valves mounted on top of the boiler just in front of the cab. The other two were finished as tender engines, one with a ride-on bogie tender and the other a six-wheel ride-behind tender. **Photos 3 and 4**.

The 5" boiler looked far too small without the tanks, so to balance the design the overall width of the engine was reduced by 1" simply by trimming ½" of each side of buffer beam and running board and reducing the cab width accordingly. The cab height was also reduced by 1". The rear section of the cab was omitted and the front section moved almost to the rear of the frame. Both engines were fitted with conventional domes and safety valves and had the boiler feeds shifted to the front of the boiler.

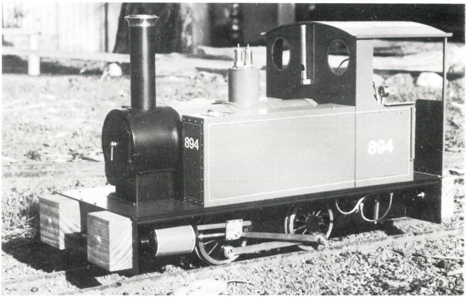


Photo1. The original 0-4-0 ***Blowfly*** *class tank locomotive.*

Performance boost

All of the engines performed well with one or two notable differences. The 0-6-0s rode more steadily although with no real difference in hauling capacity. The fitting of the 6" boiler however made that particular engine so much easier to handle. It had a much greater reserve of steam requiring a lot less attention and because of the extra weight and extra axle, rode and pulled really well. The particular boiler that I fitted to this engine was one that I had spare and was of the narrow firebox type. The boiler was the same overall length as ire specified boiler although the firebox was quite a bit longer than the original. However, as the firebox was of the narrow type the overall grate area was only slightly larger than the normal 5" version.

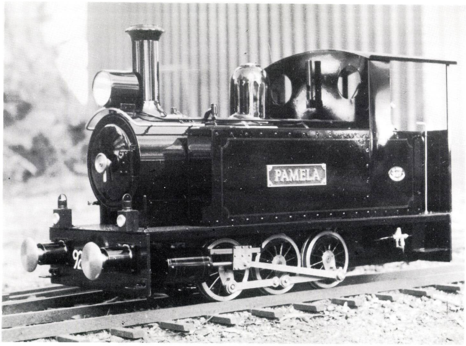


Photo 2. One of the early 0-6-0 versions of ***Blowfly****.*

The test and interesting results

I have my own track that I use to test all of the engines that I build and at the time it was about 1200 ft. long with a good long grade. I was able to complete 14 laps of this track with the 6" boilered engine on one fire before pressure began to fall. Another engine fitted with a 5" diameter boiler could only complete nine laps with one fire. This really brought home to me the difference in stored energy there is in the extra capacity of a boiler of only 1" larger diameter. If I were to build another *Blowfly* of this type I think that I would make the firebox straight sided as in the smaller version. This would give more firebox capacity and would result in a very free steaming boiler that would be very easy to handle. It would however make the grate and ashpan more complicated as the firebox would be wider than the frame.

The swarm

The *Blowfly* rally which has been staged annually by the Mudgee club (NSW) has brought to light quite a few *Blowflies*, either finished or part-built and while some are better finished than others, all seem to perform pretty well up to scratch. There are some really beautiful examples with lots of added extras, polished brass, fancy frame plates etc. From my observation certain members of the Illawarra club seem to be having a contest to see who can fit the greatest number of accessories to their respective engines while at the same time using as much polished copper pipe work as possible to connect up these fittings. This has resulted in some stunning examples of the design, much more elaborate than I ever intended it to be.

One or two (or three or four) examples seem to be present at every invitation day or special event that I have attended over the last few years. I have often been approached by people just starting out in the hobby who have chosen the design as a starting point. This I find most gratifying as this was the main reason for publishing it in the first place. I find it strange however that so many very, experienced builders have produced *Blowflies*. The answer seems to be that they find them a useful, easy to build, knock-about club engine that will haul an acceptable load. At the same time it relieves the wear and tear that regular club activities inflicts on their prototype engines.

From the number of casting sets that our suppliers have sold and the number of finished examples that I have seen I would estimate that there must be at least a hundred engines running about the place. It has been said in the past that of all the models, of all types started only one in ten are ever finished. From what I have seen *Blowfly* builders seem to be running better than the average when it comes to getting an engine going. This is great and a real buzz to me. However, I shall repeat what I wrote in the introductory article, and that is the hope that builders will use the lessons learnt in the *Blowfly* experience to construct a real engine, preferably 5"g NSWGR prototype as this is my personal preference and I am allowed to push my own barrow here. Please don't just be satisfied with your *Blowfly*, get in and build a proper engine.

After *Blowfly*...

A good copy of a prototype main line locomotive, with the exception of the valve gear and general detail work is not that different from a *Blowfly*. Wheels and axles are all much the same, there are just more of them. The cylinders are no different to any slide valve type. In fact I have just finished machining a set of slide valve cylinders, steam chests, valves etc., for a NSWGR 50 class and it occurred to me as I stood knee deep in cast iron dust that they were almost identical to a set of *Blowfly* cylinders. A boiler is a boiler and the lessons learnt in a *Blowfly* boiler should enable any constructor to be more adventurous next time. A bigger one just needs more heat. A great deal of the extra time in building a prototype goes into the detail work but it is this that really makes the difference. Valve gears can be a worry to many people but I find that if I copy the full-sized example exactly then there is no problem. Those designers knew a lot more about the subject than I ever will so why bother to fiddle about with their arrangement. Don't be put off if your preferred engine has piston valves as these are easier to machine than slide valves. It is all lathe work. Piston valves came into their own when we discovered those beautiful little rings from automatic transmissions. They seal perfectly with careful fitting and need no lapping at all. Some modellers are having good results with teflon rings.

I seem to be getting away from the subject of this article and to get us back on track If there is enough demand and the editor is willing I shall consider writing a few lines giving details of the 0-6-0 version (*the editor is willing!... ed*).

*Photo 3. An 0-6-0 **Blowfly** with bogie ride-on tender.*

The concept

Incidentally whenever I build a *Blowfly* I usually use the original magazine articles. I did not make any drawings when the first engine was built. It just sort of grew around a piece of 5" copper tube that was lying around my workshop. I used the general dimensions of the *Sweet Pea* design for length height and width as I wanted an engine about that size. The works however are totally different to *Sweet Pea* with the exception of the crosshead slide bar assembly.

The beginning

About the time that *Blowfly* No.1 was finished I had a visit from some of the Canberra "bods" and among them were the team from the very new AME. They suggested that the little engine would make an ideal subject for a beginners constructional series in the new magazine. In a moment of weakness I agreed and the rest is history.

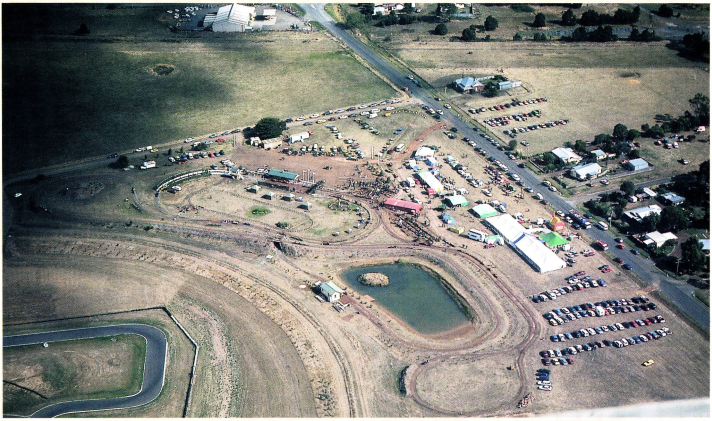
*The full index of the **Blowfly** locomotive construction series can be found in two parts.*
A-K is in AME issue 57, November-December 1994.
L-Z is in issue 58, January-February 1995... ed.

*Photo 4. An 0-6-0 **Blowfly** with six-wheel ride-behind tender*

Cobden 1997 — 41st AALS Convention

By Gerardus Mol and Melanie Dennis

Photos by Brian Carter unless otherwise indicated



A general view of the convention site through the lens of Les Mouat — one of the many brave souls who took advantage of a scenic flight.

Cobden is on the now closed and dismantled railway line between Camperdown and Timboon in Victoria. This small country town is in the middle of Victoria's dairying industry, but by the brownness of the land, this is hard to imagine. Three months with no rain doesn't help the landscape, and Cobden is no exception. So when the dark clouds started to roll in on Thursday, everybody on the land welcomed the sight and the possibility of rain; except the organisers and the convention goers that is — and rain it did!

The ground level loco area at full capacity. The carnival atmosphere is evident in this view.

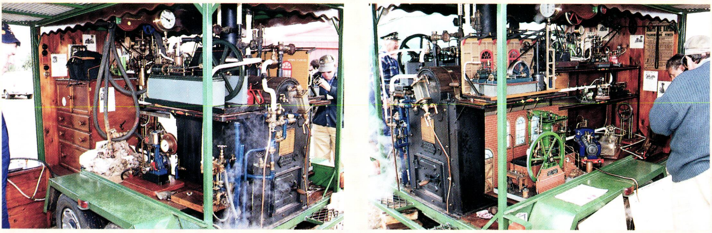
Overall, the weather was not too bad and we lived with the occasional showers throughout the weekend. The cold winds in the evening were braved by only a few who ventured out for the traditional night runs, giving new meaning to "refrigerated express".

Many were wondering what to expect when arriving at the convention site as this was only a new club and, we had never heard of the place, let alone know where it was. We were really surprised as to what we saw, as every thing was well organised, from parking attendants to the staffing of the turntable area. Where ever we went there was always someone there to help and this continued throughout the whole weekend.

A few statistics

From the figures available from the Convention Secretary, Heather Petrie, there were 570 initial registrations and 150 at the site making a total of 720 delegates.

Several travelled a long way to take part in the Convention — 20 came from New Zealand, Lindsay McDonnell and Joe Carroll from British Columbia in Canada and Mr and Mrs Fred Springer from Texas in the US.



Bookar Steam Company. The photos show both sides of Ivan and Neil Sanders unusual steam attraction. Over the last 20 years they have built just about every Stuart Turner engine available plus many other types. 15 years ago they aquired an ex-army Wiles cooker boiler and built the trailer around it. The models are permanently piped into the boiler and all run on steam. The boiler supplies steam at 70 psi to a manifold where it is regulated to 25 psi, each model can be controlled from a valve array. The trailer is sealed for travel and the sides double as an awning during the display.

In registered locomotives; there were thirteen 3½" gauge; eighty-three 5" gauge; fifty 7¼" gauge. Three steam road vehicles, a few boats and a stationary engine display tallied up to an impressive show of model engineering.

The site had to be seen to be believed and what had done in those few years was truly amazing, especially when you consider the population of the area. It goes to show what can be achieved when a town gets behind a project, and this town certainly did. There were train decorations in the town shop windows and everybody got into the railway atmosphere which was fantastic.

So this was the beginning of the 41st convention. Some people camped in tents or stayed in caravans on the TAFE college grounds, while others stayed in hotels/motels scattered around the district. Some arrived early enough to start running on the Thursday before the Friday rush.

All day cars, trailers and trucks arrived to unload locomotives, wagons and equipment for the start of the convention. Very soon, it was difficult to find a bay to park the locos on, and the ground level sidings were soon filling up with beautiful rakes of scale rolling stock and other locomotives. That evening in the large marquee, we all gathered for the traditional meeting of friends and official welcome, to the convention over a cuppa. So after some friendly hand shaking, back slapping and the occasional hug and a kiss (from the ladies) it was off to our various accommodation for the night.

Bert Francis' steam car with slightly more modern cars as a backdrop. Bert delighted the delegates and visitors by offering rides in the passenger seat. The ⅔ scale steam car performed effortlessly, silently, and often swiftly, throughout the convention.

Good Friday

During the night it rained and again we wondered if we were going to have another wet convention. But the rain held off and we returned on Friday morning to the convention site to begin steaming our locos, or starting up the internal combustion contraptions for a day's run. Some of us had trouble firing up our locos as people continually came over for a chat and to view our engines. I know it took me four hours to light up my loco, but I did not mind, as this is what conventions are all about. Most of us enjoy this social side of the hobby, and it was good to catch up with so many of our friends that we only see during this yearly event. Unfortunately we seem to notice the ones who no longer attend, either because of distance, lost interest, health, age or to their departure on that train bound for Glory. We miss them and that is why our hobby is so enjoyable as we are bound by our special friendships of caring.

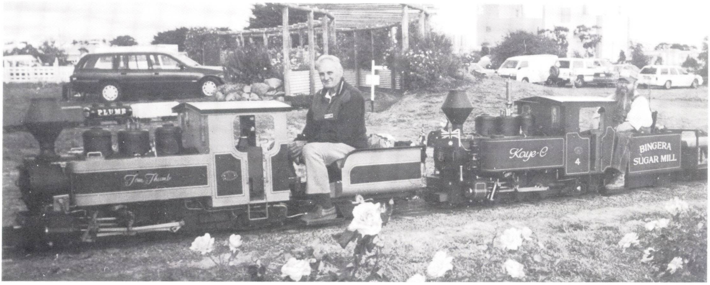
We learnt during the day that a certain gentleman from the sunshine state (who shall remain nameless) decided to have a run at the Wandong live steamers on the way south to the convention. Well, in doing so he succeeded in starting numerous line side fires, try and tell that to the four fire engines and two police cars that arrived on the scene! We all had a good laugh about that one, and no doubt he shall be reminded about it for some time to come, knowing those Queenslanders.

What a great day we all had, driving our locos, and everyone's else's (if we had the chance), and the track was as good to drive upon as it was to look at. Traffic was very busy at times but congestion was kept to a minimum by the people responsible at each junction through the weekend. The track work extended into the distance, and the climb up the embankment provided a thrill if you could get a clear run. Everywhere one looked there were trains, and there were plenty of places to sit your bum to view the proceedings.

There were, as usual with conventions a wide variety of trains, from Bob Nash's 7¼" gauge 4-8-4 Union Pacific to Eric Underdown's 0-2-2 7¼" gauge Rocket, that ran very well too. Then there were the large 5" gauge locos like Warwick Allison's WAGR V Class 2-8-2 down to Hugh Elsol's 0-4-0 which looked more like two beam engines on wheels, a self shunting vertical boilered wagon perhaps? This little engine ran beautifully and it looked fascinating with all the moving parts oscillating as it went along. Near the station was the raised 3½" and 5" track taken up by the smaller locomotives.

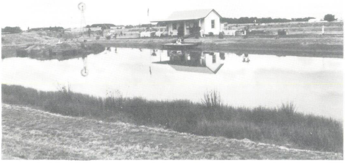
The trend seems to be, in the model engineering world, that people are building more scale rolling stock, and the number of scale wagons that turned up for this convention confirms the trend. Not only do these scale wagons look great behind the engines, but they also make for spectacular derailments when they happen. A double-headed goods train hauled by 5" gauge 34 and 50 class NSWGR locomotives were going down the long grade when one of the goods wagons behind the locomotives became derailed. The

There were about thirteen 3½" gauge locos registered at Cobden. The most 3½" gauge locos that's been to a convention in a long time.

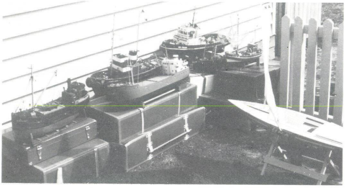


A pair of Bunyips! DVR's Tom Thumb leading Graeme Clarke's Kaye-C being driven by Mark Carney. Kaye-C took out the SSME trophy for the most popular locomotive as voted by the delegates.

A small sample of the extent that the Cobden shopkeepers went to support the convention. Just about every store had a railway decoration.
Photo: Susanne Carter



The pond area calmly keeping the old Cobden Station building company. The station contained historical information and artifacts of the area's milking industry.



A maritime model collection produced by Andy Boyd of Geelong. Andy virtually had the pond to himself as very few model boat enthusiasts came to the convention.

result looked very prototypical as numerous wagons were seen rolling down the embankment. I won't repeat the driver's reply when they were asked for an action replay for the cameras.

Local tours

Bus trips to the shipwreck coast were arranged and for all those who enjoyed flying, there were joy flights along the famous Victorian coast all through out the Easter weekend. For those who wanted to do something different, there were Craft workshops each day. The convention organisers arranged, in the main tent, five computers loaded with games for the kids to use, although at times the kids had to wait for the adults! There were many things to see and do for everyone.

AMBSC meeting

Dave Merrifield's distinguished career as AMBSC secretary drew to a close this year. Mark Watkins was introduced as the new secretary. Congratulations to Dave on a job well done and welcome to Mark.

Eric Evans would like to stand down as Chairman of AMBSC at next year's convention. If you think you would fit the bill, contact AMBSC.

The busy cooking team behind the scenes.

Plenty of delegates took advantage of the only "high ground" to get a better view of the activities.

The Technical Representative, Ross Forsyth, asked for submissions for the impending update of the copper boiler code.

Saturday

Saturday was the official opening and the ceremony started with a lone piper playing the bag pipes on the footbridge near the station. After the speeches were made and the convention officially opened, the official train departed the station and the grand parade followed. There was a continuous line of trains running around the tracks with some of the drivers dressing up for the occasion. If there was a prize for the best dressed driver then it must surely go to Ron Dubber driving his Indian 2-8-4T *Dholpur.* Ron had darkened his face, painted some of his teeth black, had a turban placed on top of his head, and sat cross legged on his driving truck. We had to look twice to make sure that it was Ron driving the loco, as the effect was quite convincing!

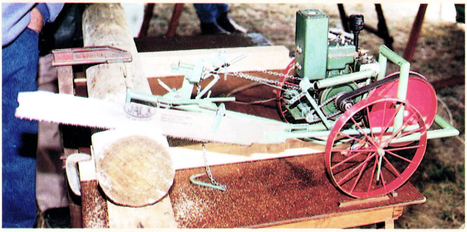
The feasting

At dinner time each evening, a prize would be awarded to some lucky people who had a green dot sticker under the plate, and if you had a sticker that was written on then you would get a special prize. It was a strange sight; people holding their plates high over their heads to check if they had a green dot on the bottom of their plate. Dinner was always entertaining, and it gave us something to laugh about while we enjoyed our meals.

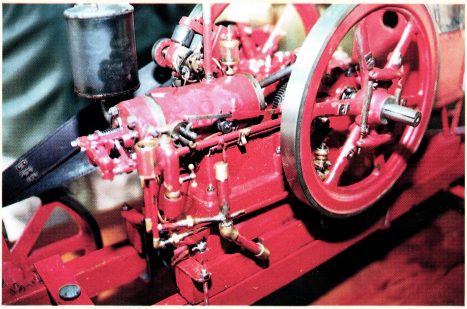
That night there were a number of choices; you could either go out for a night run on the plains of Siberia (that's what it felt like), go to the riveting meeting of the AALS, or enjoy the sounds of the Concert playing in the marquee. From what I hear, all three were interesting, although I understand that the plains of Siberia was just that, *cold*!

AALS meeting

The meeting warmly welcomed Graham McCarthy and Gavin McCabe, representatives of the Model Engineering Association of New Zealand (MEANZ). MEANZ has been formed for about 20 months. The management comprises of the President, Secretary, North Island



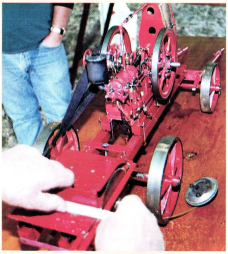
A working model drag saw. The three photos in this corner of the page are of models from the skillfull hands of Vic Middleton. Vic made all the miniature castings himself. Each model has every detail of the full-size version and every part works!



A closer look at the engine on Vic's circular saw. Vic's miniature Hit & Miss engines captivated everybody who saw them. To give you an idea of the size, the cylinder head bolts are about 5BA! Vic also brought along a miniature hay baler that spent a few hours making little hay cubes.

It's good to see someone having a great time at a convention. Ron Dubber really got into the spirit of things by dressing up to drive his Indian 2-8-4T Dholpur.

Photo: Gerardus Mol



Vic's working circular saw. Vic was busy cutting small timber pieces for the admiring spectators.

Representative and a South Island Representative. Gavin and Graham spoke briefly about the hobby situation in NZ. The NZ Pressure Vessels Department have accepted the AMBSC Codes for miniature boilers. The NZ Government are preparing a new Amusement Devices Act. They hoped that affiliation with AALS would lead to an exchange of ideas to enhace to hobby in both countries.

The AALS meeting adopted the motion that affiliation with MEANZ proceed.

Neil Cram stood down as AALS insurance officer. Barry Glover presented Neil with a token of appreciation — a scale model of the first Mercedes Benz car.

There were two nominations for AALS President: Alan McGaskill and Barry Glover. After an election, Barry Glover was declared President for another term.

What's in a name? The Australian Association of Live Steamers (AALS) and Australian Miniature Boiler Safety Committee (AMBSC) amalgamation means a new name. They started with Australian Miniature Live Steam Safety Training and Operation Committee (AMSTOC), but decided it was a bit long. It was suggested that Australian Live Steamers Safety Committee (ALSSC) would be an acceptable compromise. To avoid confusion, I'll continue with AALS for this story.

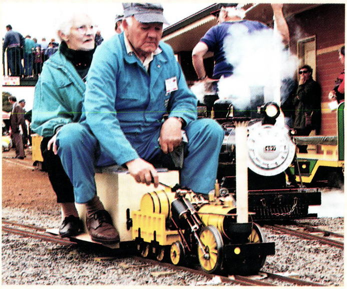
New affiliates

Three clubs were accepted into affiliation with the AALS: Kattaning Miniature Railway (WA); Bendigo Society of Model Engineers (Vic); Southern Highlands Model Engineers (NSW). Congratulations to the clubs concerned.

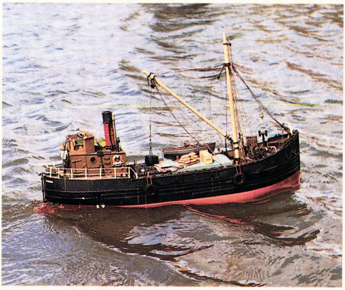
Because of increased administrative charges, the meeting adopted the motion to raise the annual affilliation fee from $2 to $7 per member.

Peter Manning was ratified as the AALS Secretary.

When and Where? The 1998 convention will be held at the Castledare Miniature Railway at Wilson in Perth WA.



Eric Underdown's 7¼" gauge ***Rocket****, with "big" power looming up behind in the form of Geoff Macpherson's 7¼" gauge narrow gauge Denver and Rio Grande K37.*



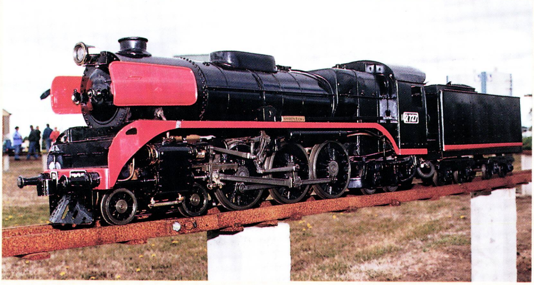
Choppy seas for the crew of ***North Light****. Andy Boyd's 1/32 scale Scottish West Highland coastal "Puffer". The radio controlled electric powered model was built from a Caldercraft (UK) kit in 1984.*

The 1999 convention will be hosted by Lake Macquarie Live Steam Locomotive Society at Edgeworth NSW.

The Vice-President, John Wakefield, concluded the meeting with a vote of thanks to the organisers of the Cobden Convention.

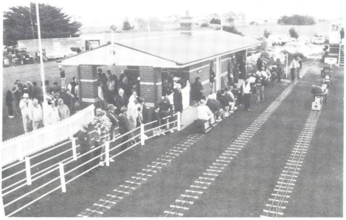
Easter Sunday

The grounds are usually open to the general public on Easter Sunday and this day was no exception. The local people were quite surprised at what they saw, as they had never seen anything like it before. They were very impressed by the quality and the sheer number of locomotives there. They were also impressed at the friendliness of the conven-



This delightful 3½" gauge VR R class 727 by L. Dwan was a smooth performer over the weekend.

The gossip centre! A closer view of the well-stocked turntable roads.



The station area was the Mecca for the public on Sunday.

John Levers didn't know it at the time this photo was taken, but he was still smiling a few hours later when he received the Tullamarine Society's Trophy for Road Vehicles.

tion goers as they freely gave of their information about the hobby and their trains.

There were lots to see, from various hit and miss engines to old cars and motor bikes. There were stage coach rides and rides in the steam car, which putted around and around all day long. The Camperdown Fire Brigade brass band played to us during the afternoon, while outside the main station a pipe organ with its highly polishes brass pipes played to the crowds waiting for the rides.

The thing that really attracted our attention was the mechanical *thing* which defied description, except that it really does nothing. Basically it is a base on four wheels and mounted thereon was a collection of gears, sprockets, belts, chains and other things that spin and whizzed around. It did have two pumps that pumped water, so that was something I suppose. The thing was that it really got us all in as it looked so fascinating as it operated: the sign said *Mechanical Magic* and magic it was!

The figures that were produced at the end of the day showed that over 2000 passengers were given rides during the afternoon.

The "Bogie" awards

Sunday night was Presentation time and this year was quite a lineup. Unfortunately, there was no recipient of the UK Southern Federation Trophy this year.

A presentation was made to Dave Merrifield for 17 years faithful service as a member of the Australian Miniature Boiler Safety Committee.

A Certificate of Appreciation was presented by the AALS to Alex Smiley (Insurance Broker for AALS) and Brian Carter (Editor of AME) for services rendered to the Australian Live Steam Community.

The winner of the Sydney Society of Model Engineers trophy for the most popular engine as voted by the delegates was Graeme Clarke with his Bundaberg Fowler (Bunyip) locomotive.

The Tullamarine Live Steam Society trophy for Road Vehicles was presented to John Levers for his Alchin traction engine.

The South Western Model Engineers Association devised a trophy for the delegate who travelled the greatest distance with a locomotive to the convention. It was presented to Paul Sherman of Perth WA.

The Bolton Trophy for the best Australian Prototype locomotive

The children took part in the Easter Sunday celebrations by dressing up to distribute Easter eggs to the delegates during the meal time.

A proud Graeme Clarke as he receives the SSME trophy for his ***Kaye-C****.*

Bill Williams receives the Bolton Award for his QR C16.

went to Bill Williams for his QR C16 locomotive.

The AME Under 25s Encouragement Award was presented to Nathan Roberts. Nathan received a boxed set of four micrometers generously donated by Hare & Forbes of Parramatta NSW, a 12 month subscription to AME, a certificate to keep and a perpetual trophy to display for 12 months.

After the presentation, there was a Bush Band and a thank you party; a great way to end the day.

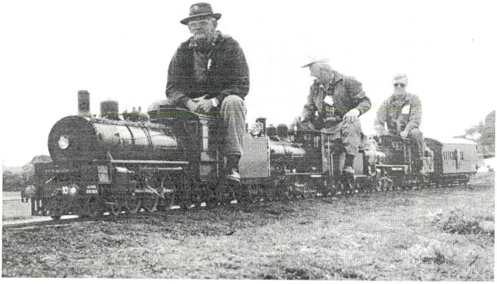

Tripple headed 7¼" gauge Queensland Railway locomotives, BB18¼ + C16 + C17 with the BBV brake van behind.

Photo: Melanie Dennis

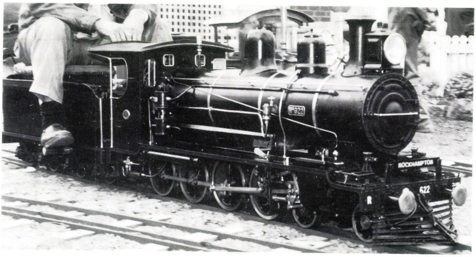
Monday

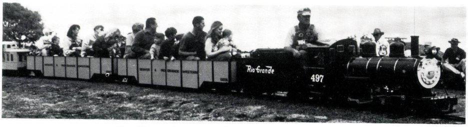
Monday turned out to be a slightly overcast day and as many had left for home, those who stayed behind found the track was less congested and we could really have a good burn, and burn some of them did too! The three 7¼" gauge Queensland locomotives were coupled together, BB18¼ + C16 + C17 with the BBV brake van behind and they set off at a flying pace around the track. Eric Evans, on the leading loco, had to hold onto his hat as they flew up the bank. I do not know what the passengers (Barbie® Dolls) in the BBV thought about it all, but it certainly is the fastest that brake van has ever gone. The speedo in the C16 touched 22kph going up the grade! No wonder the drivers had big grins on their faces, who wouldn't!

The blow down

Finally and too soon it was time to once again blow down the boilers and load our locomotives whilst reflecting on the weekends happenings. Slowly the steaming bays empted and people, once loaded, headed for the marquee to have dinner for the last time. As usual the meal was excellent and after the meal was over, speeches were made thanking us for our attendance. Special thanks were given to those who worked so hard in preparing the meals over the weekend as the food was really great, as was the organisation of it all. Anne Willis came out the front and read a poem about the convention, after which Miles Ponsonby asked that Chas Goodwin go out and recite a poem. Now old Chas is a story teller from way back, and he entertained us with a couple of really good poems which had us rolling on the floor with laughter.

Then came the time to close the 41st convention and this was done by the lone piper who played a couple of very nice pieces on the bag pipes. As he played we looked out of the tent window and silhouetted against the red glow of dusk, a lone locomotive with steam escaping from the safety valves, steamed into the darkness, a fitting epilogue to a *great* weekend. We all joined hands and sang *Auld Lang Syne* after which we said our farewells and headed for home once more.


Bill William's Bolton Award winning 7¼" gaugeQueensland Railways C16


Geoff Macpherson's 7¼" gauge Rio Grande 497

A Convention in their Town

by Anne Willis

Thursday 27th March and the town of Cobden waits
To hear the shrill of whistles at their gate.
For the big day has now arrived,
and the townsfolk stand with pride
as they host the AALS Convention in their town.

For three years they worked hard and well.
Just look at the grounds and you can tell.
The loving care of flower beds,
The well constructed Loco sheds,
For they're having the Convention in their town.

A dream was had by a Farmer Man,
John Wiggins said.. "You can
Have a Miniature Railway here
and it won't be too dear
to hold a Convention in our town."

So Allan Hart, the local Cop
and other folk got on the hop,
and together with the local Schoolie
said, after discussion, "Do we
have the Convention in our town."

Quota, Football and other Clubs too,
worked hard at serving you.
A man named Geoff provided Coke,
no one now says that it's a joke
To have the Convention in our town.

The days have flown,
and friendships grown,
a time enjoyed by all.
So farewell till another whistle call
To a Convention in your town....

AME Under 25s Encouragement Award

There were three entries this year, each with a railway theme. The excellent standard from our younger modellers continues — there's still hope!

The Encouragement Award is not a contest, we are all winners by the simple fact that these modellers took up the challenge to show off their work.

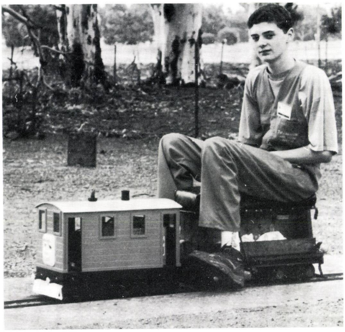
Several clubs have asked AME about how to recruit more members. While some clubs are thriving, others are not. One way to encourage new members is to look to the younger people, member's children, passengers on running days and any other that express the slightest interest in what you are doing.

Nathan Roberts

Nathan (16) is from the Tullamarine Live Steam Society. Nathan was an entrant in last year's awards. He resubmitted his battery electric tram engine that he entered last year. His persistence paid off as the judges awarded Nathan with this year's Encouragement Award. His tram engine is a self-propelled locomotive. His father guided him through the difficult parts and supported his efforts — as did the father's of each entrant.

Philip Mere

Philip (13) is from the Adelaide Miniature Steam Railway Society. Philip submitted the front pilot beam and smokebox front for his Pensylvania 0-4-0 A5s switcher. The parts were very well made and indicate that the completed locomotive will be a work of art.

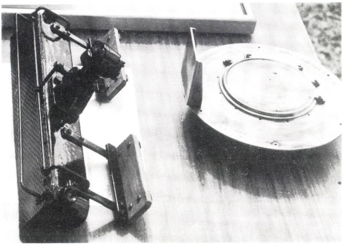


Nathan Roberts and his model Tram Engine.

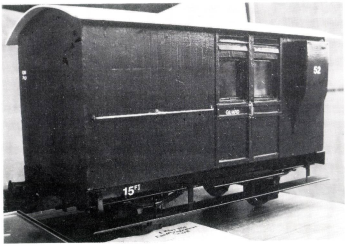
Andrew Allison

Andrew (11) is from the Sydney Live Steam Locomotive Society. Andrew submitted a delightful Queensland Railway Vintage Brake Van. The prototype is situated at Queens Park Ipswich with A10 No.13. The brake van has a welded steel frame. The plywood body was hand-scribed to represent the individual boards. Andrew's Brake Van is often seen bringing up the rear of dad's (Warwick) WA V class loco.

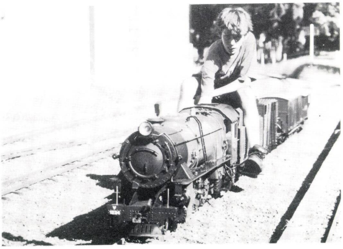
Philip Mere holding the pilot beam.



Philip's Pilot beam and smokebox door
for his 5"g Pensy A5s Switcher.



Andrew Allison's 5" gauge QR brake van.



Andrew doing what he likes best — driving his father's V class loco.

Cliff & Bunting Modifications

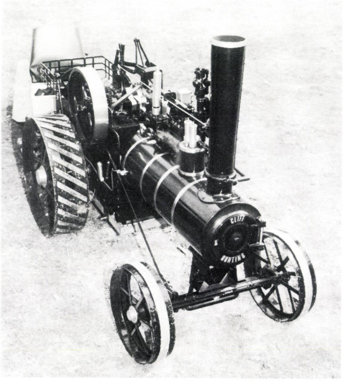
by Ray Schilling

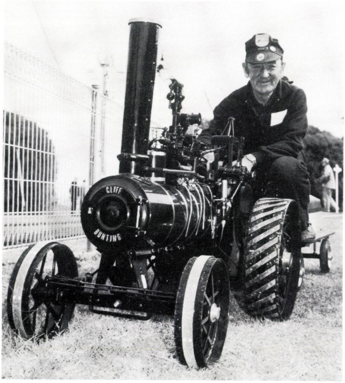
Photos by Les Mouat. Drawings for publication by Neil Graham

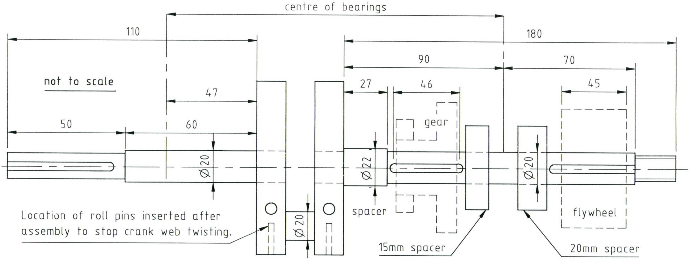
The Cliff & Bunting traction engine has proven to be a popular choice of model for traction engine enthusiasts. There are new models at each gathering. Mine has been running for a few years now and I have picked up a few clues along the way.

To assist those who are thinking about, or still building, a Cliff & Bunting I offer these notes.

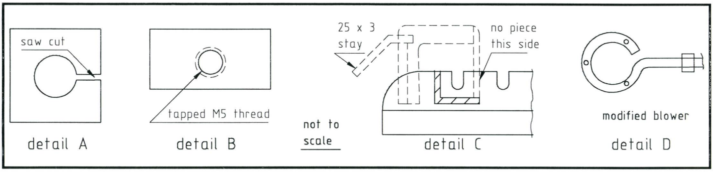
- Referring to drawing 4, section D-D, the cage should be 54mm wide (not 27mm as published). Also, increase the 68mm leg to 75mm.
- For the locomotive type boiler, the steel dummy throat plate should be 10mm from the front edge of the hornplate to allow the boiler to fit. Rest assured the locomotive type boiler is very efficient.
- Move the whistle bush forward to allow the whistle to mount on the side of the crosshead guide.
- Move the steam dome forward 5 to 10mm to allow room to fit the cleading more easily.







MODIFIED CRANKSHAFT FOR CLIFF & BUNTING



- Watch for the Governor edge not allowing removal of the steam chest cover without first removing the governor.
- The tender assembly measurements are wrong where fitted to the hornplates. Work to the hornplate width.
- The pump mounting should be 10mm thick. You should only need insulation on the Briggs boilered engine.
- Increase the throw of the eccentric to 14mm if it is not shown as such on your drawing. Also change the bearing to a 6907-2RS.
- The drawbars should be 272mm, not 172 as shown.
- I would suggest splitting one side of the crankshaft and motion shaft bearing carriers (see detail A) instead of threading and making threaded caps. The holding down bolts thus automatically clamp the bearings and makes it much easier to remove and adjust bearings.
- The crankshaft is too long in the original drawings. The ¼" steering rod has to pass behind the flywheel and mount on the hornplate, notwithstanding the flywheel missing the rear wheel.
- The valve eccentric should be set at 180 degrees to the crank to effect timing. The reversing arm pivot point on section D-D on Drawing 4 will be found to be wrong. It will need to be found by trial and error. However, it is impossible to get equal valve movement in forward and reverse, so set for the best running forward. I would suggest making dummy moveable pivot point bracket and clamping it in place. See Detail B.
- I made a water tank from an old copper hot water tank for the tender. The tender itself is made from steel. The copper tank is held in by the water outlet fittings. This whole assembly is stronger and cheaper than brass.
- The differential I made from the innards from a Honda utility. These can be easily modified to fit. They will need softening.
- The steering gear and worm I obtained from an old cream separator! How do you source these things? Go to a scrap metal yard and ask them to keep and eye out for your needs and leave you phone number.
- The pulley from a old Lister milk pump makes a good flywheel. It only has four spokes, but they are the right shape. A steel tyre can be made to fit onto this pulley to thicken it up.
- When making the bearing outrigger (see Detail C), you must remove the right hand side to allow holding on of the section D-D (if you have made it).
- If you are not confident with gear cutting, then there is a firm in Brisbane who have made several sets now, mine included.
- I would strongly suggest that roll pins (aka. Sel-lok pins) be fitted to the crankshaft webs after assembly of same.
- I was unable to make Peter Bucknell's forced draft fan work very well, so I made simple ring (see detail D) from ⅛" pipe with 3 x 1⁄16" holes to sit around the blast pipe at nozzle height. I also made a T fitting inside the smokebox and brought the pipe out through one side of the smokebox to attach an air hose.
- Bevel gears suitable for the governor are used in cotton pickers by the thousand. A pair can be purchased for less than ten dollars. However, they will need softening.

These notes are a collection of minor modifications and corrections to the Peter Bucknell designed traction engine. The references are to the drawings and construction manual sold by Live Steam Supplies of Melbourne, who are regular advertisers in this magazine... ed

Why a Bunyip?

by Graeme Clarke

Thirty five years ago I was introduced to "live steamers" by Colin Campbell when I was apprenticed to him as a screen printer. Colin invited me to visit the late Dr. Ore's home at Surrey Hills in Melbourne.

I was hooked straight off. I helped to set up and build the track at Moorabbin and was a regular visitor to the other tracks around Melbourne. Family commitments intervened in any plans I ever had of owning a loco of my own but the idea never disappeared. After reading the AME article by Graeme Stancliff on the *Yarra* locomotive about 5 years ago, I got in touch with him and I haven't looked back.

I asked around with the idea of one day owning my own loco. I visited the Diamond Valley track and came upon Len Cotterels' *Bunyip*. Len let me drive it for a few laps around the Diamond Valley track and I was hooked. Len said the *Bunyip* was built by John Nicholson and Ian Smith. I rang John and discovered that there was a partly built *Bunyip* for sale.

The *Bunyip* is based on the Queensland Bundaberg Fowler engines built for the narrow gauge sugar cane system. So far there are four 7¼" locos commissioned with another half-built.

Kaye, my wife, and I went up to Canberra. It was here that I met the owner Gerardus Mol, and after a long discussion, I acquired the loco. I didn't have the time, knowledge or equipment to finish the loco at home, so I asked John and Ian to help. John said okay, as Ian wanted to finish off his own *Bunyip*, and it was just a matter of doubling up on parts etc. — or so we thought.

Monthly visits to Canberra became a normal part of our lives. Parts were devised, manufactured, improved upon and assembled, and eventually the loco and tender were ready to paint.

I painted the loco and tender. Colin Campbell, some 35 years after introducing me to live steam, had the honour of signwriting *Kaye-C*.

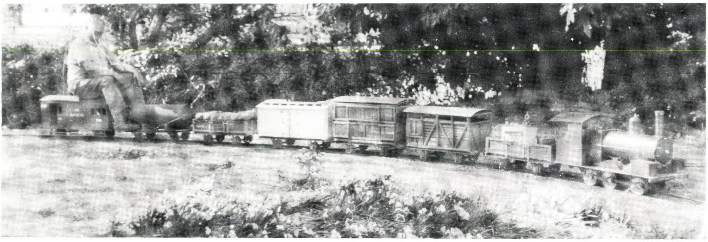
Kaye-C now lives at the Clarkeville Model Railway, where we have set up a 7¼" gauge track about 600m long, with station and steaming bays. *Kaye-C* also runs at the Gippsland MES track at Traralgon. If you are in the area, please give me a call and come out for a cuppa and a run.

I would like to thank John and Ian for the precision work they undertook to help finish off the loco, and for their hospitality whenever we were in Canberra, also Chris Pearce who has helped with the carriages and the track at home.

Our special thanks to the members of the Australian Association of Live Steamers who chose *Kaye-C* as the most popular locomotive at Cobden in 1997.

7¼" gauge Rolling Stock

by John Meagher

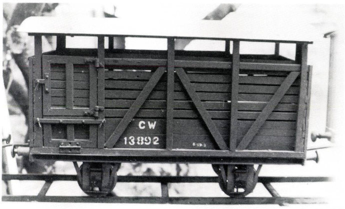


The complete train. The loco is an electric powered "19 class".

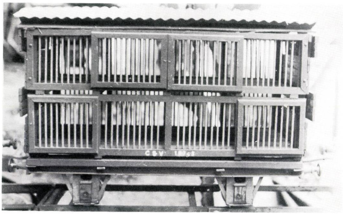
When researching material to build some four-wheeled rolling stock for my 7¼"g railway I spoke to Bob Gallagher of the *Australian Model Railway Magazine* about a book *Railway Freight Wagons of NSW.* I thought this would be easier than trying to get information of the older types of NSW wagons from State Rail Archives, unfortunately the book is out of print, so back to the Archives.

Eventually some information was unearthed and the rolling stock was constructed. Before you think how rough these are I should say that from turning the wheels to painting I only spent two weeks (night only) on each one. The refrigerated meat van was done in the Christmas-New year break. Since the photos were taken I have fitted dummy springs as shown in the photo on the next page. This was fitted to a tank car which I copied from a photo taken by my Father at a local smash in 1926.

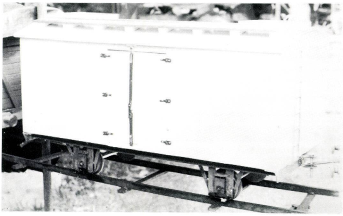
I used tallow wood decking for the floor of the cattle and sheep vans. I get the 65mm by 19mm section in 300 to 600mm lengths as offcuts from building sites. The corrugated



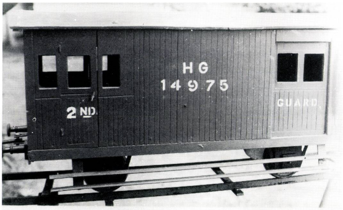
CW Cattle truck.



CSV sheep van.



Refrigerator van.

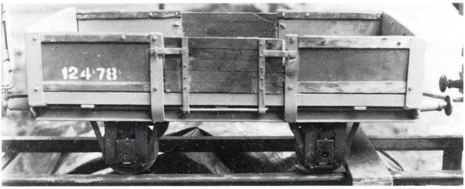


HG guards van.

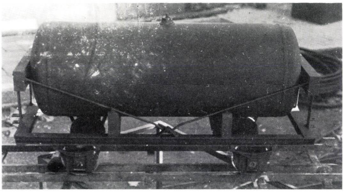
top surface of the decking board is just the thing for this use. I sliced the top layer off the board at 5mm below the surface. This still leaves about 1.5mm of timber below the root of the corrugations.

There are two good S wagons near Eugowra. These were at a mill to be loaded when a bridge got washed away some years ago and they were left where they were. There are also two at Parkes and I took photos of various sections putting a piece of white board that is 12" long somewhere on the wagon so it shows in the photo. When I enlarge the photo I calculate for the 12" board to be 1½" long on the print which is the scale for 7¼"g. If you would like photos of any part of the prototype S truck, let me know and I would be pleased to enlarge them for you at no charge.

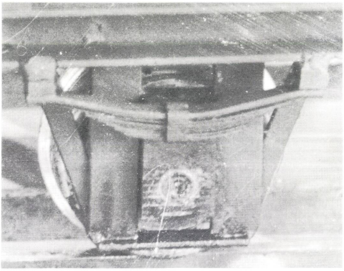
The 19 class is electric so my grand children can use it, as well as the diesel shunter.



This was the first S Truck made, the second one has hinges as per the prototype.



Tank car.



Leaf springs as now fitted to all wagons.

Corrosion Proof Water Tanks

by Rod Sullivan

Selection of materials for, and corrosion proofing of water tanks, be they side or saddle tanks for tank engines or tenders for other classes is often a costly procedure. Even further expense and difficulty in preparation for painting in the case of brass tanks.

A liner

My solution to this problem is to construct and fit a totally enclosed (except for filling and drain holes) plastic box inside the usual tank, thus no water is in contact with the metal outer skin.

While placing a "tank within a tank" will cause some reduction in water volume, this can be minimised by using plastic of, say 2mm or less for small tanks. The addition of a well to which outlets and strainers are fitted can also be easily done using small pieces and will marginally increase volume while improving access.

Assembly

I used Perspex® offcuts and a glue recommended by a local sign company. The pieces can be cut with any saw and are easily assembled. The Acrifix 192® glue has considerable gap-filling ability should any errors be made. The greatest advantage is being able to assemble a tank, let it set, then fill and test, all within 30 minutes. The finished plastic tank can then be installed inside the usual metal tank but in this case made of a cheap, easily painted metal.

As an added protection the exterior surfaces of the plastic joins can be sealed with Selleys Window and Glass Silicon.

Some points to consider when using glued tanks

- Make a hole large enough for your hand to fit in the top of the tank. Then make up a patch, and use self-tapping screws to secure it, then when fitting pipes you can use fingers, or tools, to attach strainers, nuts etc.
- If appropriate, cut a bathplug-size hole in the lid so that your tank is kept sealed except when filling, but don't forget a breather hole. For small tanks use a basin plug; both standard sizes from hardware stores.
- Glue a pad to the place where fittings will enter the tank. This will give a greater depth for screws etc and provide additional strength to resist flexing caused by pipes or fittings being attached.
- Mistakes, or modifications, can be achieved by cutting with a jigsaw or similar device. A hole saw with a nest of bits will cut most holes.
- Cost can be further minimised by obtaining offcuts in odd colours. After all, if your inner tank is to be enclosed permanently in an outer shell, does it matter if it is fire engine red plastic on one side and green on the other!

Warning

A word of caution: the glue is similar to that used for model aircraft kits and has a very strong odour. Only use it in a well-ventilated area.

Wimmera Live Steam and Model Engineering Society

by Colin Warrick

Wimmera Live Steam and Model Engineering Society was founded in April 1993, track construction commenced in earnest late that year after a generous offer from the Wimmera Wool Factory; a sheltered workshop producing among other things Ultra Fine merino wool from housed sheep. They provided a suitable site with very ample area for expansion if needed plus track materials and ballast, club members fabricated track in the evenings and did site work on Saturdays. Wimmera Wool Factory will use the track as part of their tourist attractions, they hope to get a loco soon to cater for occasional rides. For practicality it will have to be a petrol or battery unit.

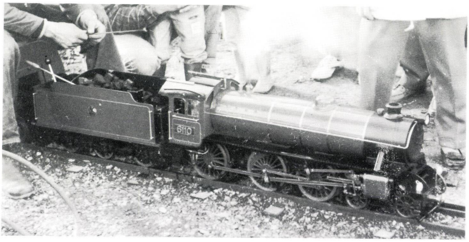
1995 Queens Birthday weekend

Forecast cold with showers, not far wrong. Eighteen months of dedicated labour had culminated to official opening weekend and there was no turning back. Four hundred metres of track in an oval plus a station siding and concreted steaming bay with turntable dual 5" and 7¼" gauge complemented with a station building. To complete the collection were three riding carriages fresh from the erecting shop.

The Saturday saw the arrival of several visitors who were made welcome the weather discouraged serious attempts to run trains however the time was well spent in exchanging valuable information and inspection of facilities.

Sunday the weather improved slightly and this was the advertised public running day plus official opening. Patrons started arriving early while drivers encouraged water to boil despite the handicap from the cold wind. Finally the trains were marshalled and the fun began — 20 minutes late though.

Numbers of people eager to ride the trains increased rapidly with four steamers and a battery diesel working non-stop for over five hours transporting in excess of 500 passengers on a two lap ride.



Club member Kevin Hutchison's 5 inch gauge Springbok.

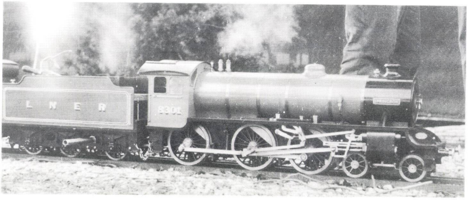
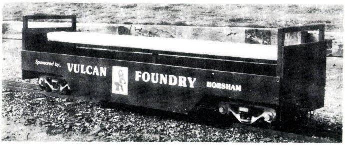


Photo 2 Laurie Cameron from Mooroolbark brought his Springbok.

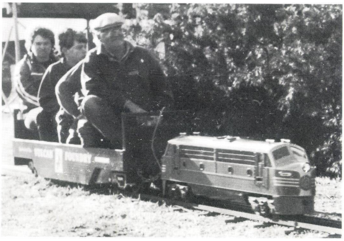
The track was officially opened by The Honourable Bill MacGrath, Victorian Minister of Agriculture, witnessed by a crowd of several hundred people from near and far. The club wish to acknowledge the tremendous help given by sponsors to provide materials to help with track construction and especially the efforts of visiting locomotives on the very busy day. All we have to do now is hope to keep the patronage up to cover ever-increasing expenses.



Brand new riding carriage one of three built by club members with bogie frames cast in aluminium by club members.

Local MP Bill McGrath does his bit with the scissors supervised by Murray Hill and Mrs McGrath.
Club President Geoff Mullhalands loco ready to go.

Keith Hartley from Moorabbin and his magnificent NA class 14A (Puffing Billy).



Secretary Stan Conway completes another lap with Kevin Hutchisons 5" battery electric V/Line B Class.

Adding a Graduated Dial to a Myford Super-7 Tailstock Handwheel

by Mike Thurgood (South Africa)

The article on page 28 et seq of AME, Jan-Feb 1997 — *The MPS Digital Readout* by Brian Carter — was of particular interest to me, and it finally stung me into action after many years with my Myford Super-7, fiddling with rulers against the tailstock casting to measure barrel movement while attempting to drill holes to specific depths. Although they usually came out acceptably well, it just wasn't good enough, parallax being a complicating issue.

I have seen the particular MPS — the subject of the above article — advertised in *Model Engineer* on a number of occasions. But at its relatively high price in pounds sterling, I did not have the inclination to wish to spend lots of Rands on one. So I turned to a minimal cost alternative which I had been considering for a number of years, viz a position-adjustable graduated dial on the tailstock handwheel. It was merely a matter of deciding to get down to the job — at long last being jogged into action by the MPS article.

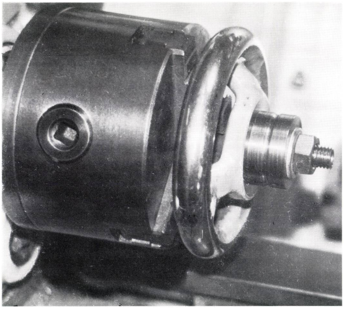


Figure 2. Tailstock handwheel mounted on an arbor. Note the groove which takes the graphited yarn to provide the necessary friction for the dial

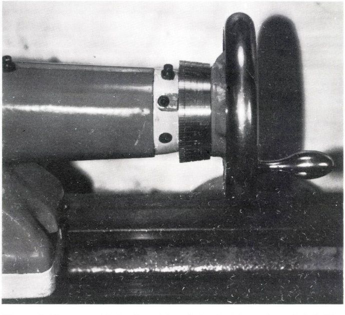


Figure 1. The assembled tailstock handwheel with graduated dial. The zeroing insert is screwed to the end collar of the tailstock, just seen below the oil nipple.

Machining the cone

I machined the truncated cone dial from aluminium, and it is a friction fit on the parallel register that I machined on the tailstock handwheel — which is cast iron, incidentally. Fig.1 shows the end result. Strangely — to me, anyway — Myford graduate their tailstock barrels in ⅛" increments, whereas the tailstock handwheel moves the barrel through $3/10$" per revolution. Well, as they appear never to have considered the need for a graduated dial on the tailstock handwheel, I suppose reconsidering the graduation intervals did not matter. Anyway, with a graduated dial, the barrel divisions become redundant.

I wonder: does the metric version have the identical three-start thread for moving the the tailstock barrel?

The handwheel

Where the diameter and length of the handwheel register were concerned, because I didn't consider them to be critical I machined the register to the greatest diameter possible, coupled with squaring off towards the "gripping" end of the handwheel — see Fig.2. To mount the handwheel for machining the register I turned down a short length of MS bar to give a light push fit on the handwheel, and threaded the end for a tightening nut, as can be seen in Fig 2 — no big deal! Note the groove in the register. This was nearly an afterthought, but luckily I hadn't removed the job from the lathe chuck.

Without making the dial so large in diameter that it would have looked ridiculously ostentatious and out of place, there was no way that 300 divisions could be put on my more modest dial with any hope of seeing them without a high powered magnifying lens. So I decided on a total of 120 graduations, thus giving 2.5 thou increments of barrel movement between adjacent divisions. Positioning the graduations is where the 60-tooth bull wheel came in particularly useful, although I had to fiddle with a small repositioning of the dial in the chuck to do the second set of 60 graduations. (I have not yet made a dividing head for the lathe mandrel, and I had no inclination to spend some weeks constructing one for the purpose of putting 120 divisions on my dial!)

Marking the graduations

The graduations were made using a sharp HSS thread cutting tool, but mounted with the cutting point horizontal, feeding the required amount using the topslide handwheel, taking care not to move its setting for the cone angle. This can be seen in Fig.3 — of which more later. The actual dial used is shown in Fig.4, which also shows, somewhat edge-on, the hole bored to suit the handwheel register diameter. The dial was hacksawed from the aluminium bar stock — why didn't I part it off? — and the cut edge was then turned down to make the final dial 5 thou shorter than the length of the register.

I made the graduated dial a friction fit on the handwheel register using a single strand of graphited yarn wound round the groove in the latter. This has worked perfectly satisfactorily. (I thought up all sorts of wonderful ideas for a friction mechanism using springs and steel balls, and didn't like any of them because there would have been far too many tiny components to drop on the floor and become irretrievably lost.

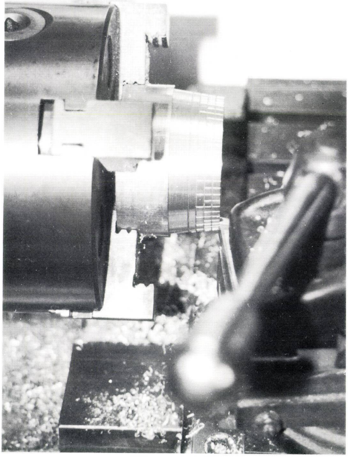


Figure 3. The first attempt to machine the dial, already graduated. Note the horizontal mounting of the HSS thread cutting tool.

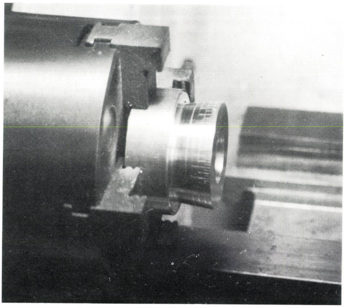


Figure 4. The finished (bored and graduated) handwheel dial before cutting from the aluminium bar stock.

Try, try, again...

Now we come to the point where "one is born every minute", so to speak. My first attempt to make the dial was a dismal failure — see Fig.3. Although it may look alright, it wasn't. Firstly, I machined the cone the wrong way round with the result that my divisions were at the wrong end of the cone. Secondly, at one point I inadvertently turned my bullwheel detent through 180 degrees, and because the shaped tip for tooth engagement is not truly symmetrical some of the first set of graduations were unevenly spaced. Well, I suppose that I shall never completely eliminate mistakes, but at least on this occasion there was no problem in recovering from it, only a bit more time was involved. The "recovery" graduated dial is shown in Fig.4 still on the bar stock, in which can be seen, at an oblique angle, the hole bored to suit the handwheel register. The graduations were marked at 10 thou intervals, from 0 to 300 — I cannot claim that my markings look excessively precise!

The final task was to machine a groove in the end collar of the tailstock to take an insert with a zeroing groove scribed on it. This can be see in Fig.1 located just below the oil nipple.

Don't just think about it... do it!

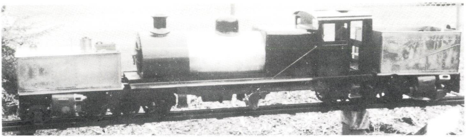
Having taken years to think about the matter, it took me precisely two days to start and complete the job. This minimal cost facility has already had quite a lot of use in the short time since making it.

In describing the tailstock graduated handwheel, I am in no way intending to belittle the MPS digital readout module, but it is, in my view, a great pity that the price cannot be brought down. Possibly it was primarily designed for commercial purposes, when costs are not such a criterion. It would be great boon for those model engineers who have vertical milling machines, in particular, in which backlash is one great nuisance. Another nuisance is having to count handwheel revs plus "x" divisions as one mills a long job to a fixed end point. And, of course, there are the times when you need to move the job from under the milling head in order to see if your carefully machined spindle or piston is the right fit "down the hole". (Well, if that isn't always the best machining sequence, it sometimes turns out thataway!)

Finally, although I haven't seen a graduated dial for a Myford tailstock handwheel described anywhere previously, I can't believe that lots of model engineers haven't made them.

Garratt Gossip

with John Cummings

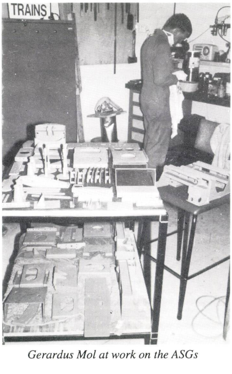


Graeme Tinkler's G class Garratt under construction.

Hi Garratt fans and welcome to another gossip session. I finally met up with Graeme Tinkler at Cobden. Greame is building a 5" gauge Victorian narrow gauge G class Garratt, he mentioned that he might send in some photos and a story about his G for the gossip page. To whet your appetite Graeme gave me a sample photo reproduced on this page.

7¼" gauge ASG

Earlier this year I received a pleasant surprise in the mail — a package of photos of the biggest Garratt model under construction I've ever seen! What's more, there are two of them! Melanie Dennis and Gerardus Mol are working together on a pair of Australian Standard Garratts in 7¼" gauge. These monsters (*I mean the Garratts... ed*) are over 4572mm long; 660mm high and 483mm wide each! One of the redeeming features of the Garratt design is the lighter axle load because of the number of wheels and the load is spread over two areas. At least the normal tracks will be able to handle the heavy ASG locomotives. Since the photos were taken I'm told that they are bashing the front and rear tanks into shape. I saw a mock-up of the coal bunker, to me it looked more like a deck chair that you normally see on a cruise ship. The driver lays back in these to operate the locomotive — the mind boggles...



Gerardus Mol at work on the ASGs

Melanie Dennis and a multitude of frame bits.

Please help

I have received a letter from a reader in the US who wants to build a Garratt of some sort in 7½" gauge. He would like to have a look through A.E. Durrant's book *Garratt Locomotives of the World* to see the kinds of Garratts that were built. Unfortunately he is having trouble tracking down a copy of the book. Does any reader know of where to obtain a copy, new or second-hand, of *Garratt Locomotives of the World*? Please pass on any information to me care of AME and I will forward it on to the US.

Prototype Garratt news

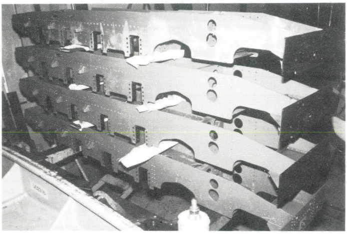
Bob Brown of SA sent in some snippets of information about the fate of some 12 inches to the foot scale Garratts. The notes were found in the *Steam Railway* magazine February 1997 edition.

A South African NGG16 Beyer Garratt locomotive has been given to the Ffestiniog Railway Company by a consortium of three enthusiasts, Roger Waller, Harald Nave and Robert Horlacher, for use on the Welsh Highland Railway. Built in 1958, No.140 is in the same class and series as two other Garratts purchased for the WHR and was due to arrive in North Wales January 1997. The locomotive is complete and in reasonable condition, although it will require an overhaul. Because of the unexpected offer, previously announced plans for the delivery sequence of the Garratts had been changed. No.140 was the third to arrive in Wales after Nos.138 and 143. Nos.139 and 142 remain the favoured purchases as the fourth and fifth Garratts as Nos.149 and 151 are from the later Hunslet-Taylor batch which would make parts interchangeability difficult.

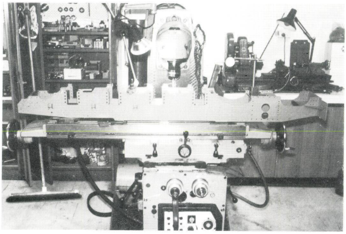
Ffestiniog Railway Chairman Mike Hart said: "We are most grateful to Roger Waller and his colleagues for this most generous donation. It is wonderful that we are getting this kind of support. The prospect of seeing three Garratts together in Wales — then bringing back the first-ever Garratt to join them, must surely excite even the most jaded of steam enthusiasts."

An unexpected snag has developed with the K1 Garratt, which is being overhauled at Tyseley. Cracks in the throatplate were discovered last December, putting a question mark over the timescale for the locomotive's restoration for the Welsh Highland Project.

The cracks, which radiate from several rivet holes, came to light as the firebox unit was being readied for attachment to the new boiler barrel. Although the old boiler barrel had been condemned, the firebox had been thought to be in good order. A full assessment of the firebox's condition is now underway, explained project leader Colin Hill, who



Assembled engine frames for two locos!



A large mill is a handy tool for machining the engine frames.

hoped the cracks were just a localised weakness at an early stage which could be rectified.

"The worst case scenario," he said, "is that we may have to condemn the firebox and have a new one constructed." Overhaul of the power bogies continues.

A novel solution

I was recently clearing out a cupboard and noticed a Garratt model on the front of a Model Engineer (April 1984 No.3726). Naturally I paused the clearing out to browse through the magazine to find a connection to the cover photo.

The Garratt was 5" gauge and a freelance design. What I found interesting was the way the builder solved a particular problem. He used a small electric motor geared to the reverse drive shaft with a 350:1 reduction. A six volt motor is fitted in the coal bunker and two press button switches wired to it. Press the front switch to link out and the back switch to link in.

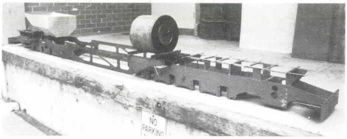
The builder commented "It works very well and, with the poppet valve regulator open, the loco is controlled by the notching up or down for more or less power".

Thanks for your support

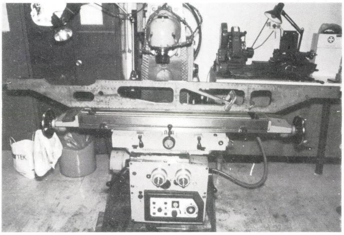
While at Cobden I was pleased to meet up with a few readers who follow the GG column. Thanks for your support and well wishes!

I am happy to prepare any material about your pet Garratt project you may care to offer. As you can see by the ASG builders in this column, you don't have to wait until your project is finished before you send in some information. A Garratt is a relatively long-term project and most of the interesting stuff is well hidden inside. It is good to see some of the parts before they are covered over! Many readers are interested in why you had chosen your particular model, or what was the source of your plans or other data, so if you've been thinking about it just drop me a line care of AME.

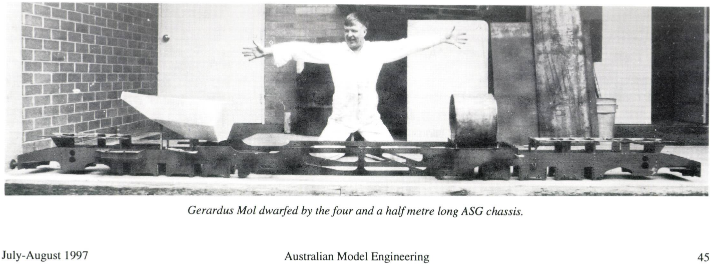
Until next time — share the gossip on Garratts.



A mock assembly of the assembled engine and boiler frames.



The mill was useful for the boiler frames too.



Gerardus Mol dwarfed by the four and a half metre long ASG chassis.

Building an Astronomical Telescope

Part 3 — The Primary Mirror, Grinding and Polishing the Mirror Blank, Rough Grinding

by Doug Shaw

Take a quantity of coarsest grade grinding material and place it in a clean screw capped glass jar so that it is entirely immersed in water.

Place one blank in position on its bench, sprinkle its upper surface with clear water and introduce a very light coating of abrasive from the jar as evenly as possible across the blank (this blank will become the tool).

Now take the mirror blank in both hands and place it on the wet surface of the tool applying heavy pressure and working it backwards and forwards for 6 to 8 strokes centred about 20mm from the edge of the tool with each stroke approaching half the mirror diameter. This will produce a lovely loud swishing, grinding sound, music to the ears of the mirror maker, but anathema to one's "better half", I find!

After the statutory 6 to 8 strokes, move the mirror about 15 degrees in one direction and the tool a similar amount in the other, or if using a post, shift position against the direction of rotation a similar distance.

This process is carried on until the grinding slows, when the mirror and tool are both removed and carefully washed and dried along with the base and cleats. They should be carefully inspected for any foreign material remaining.

Repeat this process until, using a straight edge and gauge, it is established that the correct sagitta depth (1.172mm) has been obtained. A word of warning when grinding, try to avoid reaching the "fully spent" stage which the grinding paste finally reaches. The combination of almost dry paste with fragments of glass and spent abrasive can be deadly when it suddenly assumes the nature of cement and binds both tool and mirror together!

I encountered this only once and had no guidance on what to do. I employed the drastic measure of giving the overhanging edge of one of the discs a smart horizontal whack with a nylon-headed mallet and it worked - that once anyway. A practice not to be recommended however. It is important to ensure that the dry slurry stage is never reached. A happy medium is needed because if too much water is used the abrasive will move to the edges of the discs and become lost. A little experience will soon sort things out.

It must be stressed that the more random the nature of the grinding and polishing processes the better the result will be and the fewer the defects that are likely to be encountered in the final figuring of the mirror.

It may come as a surprise that it is possible to try your mirror so soon in a rather lengthy process. If the embryonic mirror is dipped in water it should be possible by pointing it's axis at the sun to project a rough image onto a white card. With the help of an assistant and a tape you may be able to get an approximate idea of it's future focal length in this way.

Fine grinding

Fine grinding is accomplished using the same technique as for rough grinding with appropriate variation of stroke and centring with less pressure on the mirror. Scrupulous cleanliness must be observed to ensure that no traces of coarse grinding medium are left from the coarse grinding stage. A single grain will ruin the results of the next finest grade of grit and compels a return to coarser grinding to remove the inevitable scratches on the mirror surface.

To commence fine grinding set up as before and using the next largest grit size recommence work, but altering the stroke to a W centred on the tool and allowing the mirror to overhang the tool by about 25mm. Work around the tool as before until a magnifying glass reveals that all the evidence of grinding with the next highest grade of abrasive has disappeared.

Keep this process up until all grades of abrasive have been worked through when the end result will be an optically smooth but unpolished surface.

During the process of fine grinding, the sagitta should be checked. If there is a tendency for it to depart from the design depth this can be adjusted by reversing the positions of mirror and tool. The time required for grinding will be at least several hours and it is a good idea to keep a diary of the number and duration of "wets". A more detailed diary will be needed for the next step.

Polishing and figuring

The next procedure is more involved and I must now remind readers of the warning given in Part 1 that this exposition would merely be an overview. However I will say that in principle it follows the grinding processes.

Firstly the tool is overlaid with a pitch layer 5mm thick and deeply channelled into squares and used as for the grinding process with modified strokes and a polishing medium of cerium oxide or bentonite or similar. Jeweller's rouge was the first polish used for lenses and mirrors but has now been replaced by the faster mediums (If a mirror kit has been purchased it should include a polishing medium). For further details the serious reader must delve into his textbook.

It will be assumed that the mirror has now advance to the stage when accurate knowledge must be obtained of its surface figure.

The earliest Newtonian telescope makers had no means other than trial and error to assess just how their instruments would behave. One wonders at the persistence needed to install and collimate the optical components and then wait for a fine night to try the mirror, and then in all probability to go back to the drawing board and so on.

Testing the mirror

In 1850 this unsatisfactory situation was brilliantly resolved by the French experimental physicist Leon Foucault who devised a most elegant test producing not only extremely accurate results but also the most intriguingly beautiful images of light and shade. I know of one amateur mirror maker who seldom got past the mirror stage of a telescope on any project simply because he always became enchanted with the mirror images he produced using the Foucault test! Now one would imagine that the equipment to produce these wonderful images might be sophisticated and intricate however nothing could be further from the truth.

Foucault solved the problem of having to actually install a mirror in its telescope before testing by creating an artificial star. For this purpose he used a lamp enclosed in a lamp house which was perforated only by a single small pinhole. He set the mirror vertically on edge in a darkened room and arranged the lamp and pinhole a distance away from the mirror equal to twice its focal length (that is at the radius of curvature) so that the light from the pinhole was directed along the axis of the mirror.

A knife edge was then set up vertically just to one side of the pinhole and also at the radius of curvature of the mirror and progressively slid across the image of the pinhole formed by the reflected rays from the mirror. This has the effect of cutting off some of the rays and giving the impression that part of the mirror was in shadow. Foucault was able using the mathematics of the sphere and parabola, to deduce the precise form of the mirror with great accuracy from the apparent shadows (the shadows are an effect only, due to the rays from the mirror which are cut off by the knife edge).

What then do we see when using the Foucault test? If the mirror is spherical and we look towards it from near its radius of curvature it will seem full of light and when the pinhole and eye are both coincident at the exact radius of curvature it will darken suddenly and evenly when the knife edge is introduced.

But what of the parabola which is our goal?

It will be noted from Figure 5 in Part 1, that the rays reflected from different regions of a parabolic mirror converge to a point at slightly different radii of curvature, the outer zone rays intersecting at a slightly greater distance from the mirror than the central rays.

By moving the knife edge outwards and inwards along the mirror axis it will be found that different parts of the mirror black out progressively from the centre to the outer zones.

By applying some simple mathematics to the parameters of our mirror we can assess accurately when we have the required parabolic form for the curve. For guidance on the details of establishing the mathematics of our mirror the serious reader should consult his textbook.

Mirror grinding tool

I received the following e-mail just after the May issue went to the printer. As it turned out its timing was just right... bmc

Sir,

The Newcastle Astronomical Society was very interested in the article on page 12 of your AME, March April 1997, *Building an Astronomical Telescope*. While the article, as it states, is "little more than an overview", there are some in our Society very keen on building just such a "beast". As a result, I am contacting you to congratulate your writer upon taking the plunge, and attempting to give a synopsis on the subject.

The grinding of the mirrors is, of course, the hardest and the most expensive part, around $1500 for a Pyrex® mirror of 8 inches diameter. On this I can offer some of your readers some hope of getting things a bit cheaper: use a glass tool.

This "tool" is actually what is used to grind or polish the reflecting surface of the mirror, the tool gradually wearing away at the edges, while the mirror, made of much harder material, wears away in the middle. It is this process which actually makes the mirror concave to a parabola. These glass tools can be purchased for around $175 - $185 price range, for an 8 inch tool, if my sources are correct. All the necessary information about this grinding process can be obtained at Astro-Optical Supplies, Sydney. Other states may need to look in the Yellow Pages under Optical Suppliers or sometimes Survey Instruments. Astronomical Supplies may also be another category worth trying.

The Newcastle Astronomical Society meets on the last Friday of each month at 7.30 pm. The venue is at the Newcastle University Campus, in Lecture Theatre E01, near the Physics building, where a variety of topics are discussed. Most nights the Internet gets used as a reference source, with the information being projected onto a large screen for all to see. Admission is $2 on the night, with the proceeds going to supplying all with a light supper afterward.

The members look forward to seeing the other articles appearing in the coming issues. I hope that the information supplied may assist someone, and maybe they'll build a telescope!

Patrick Barry

Secretary of the Newcastle Astronomical Society.

Name Plate Patterns — an Alternative Method

by Kelvin Davis

When it came to making the name plate for my 7¼"gauge Heidi *Binna* I did the usual inquiry of the members of the club as to how or who made the name plates for their locomotives.

After eliminating those that had paid more than I could afford to have them made, those that just didn't look anything close to what I wanted, and those methods that required skills I didn't believe I had or would take longer than I was prepared to spend in making such, I was left with nothing. So I had to devise my own method which is set out below.

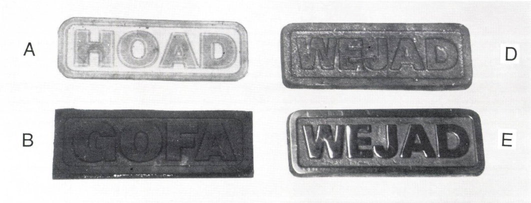
The main problem in making the pattern was creating the lettering. What I sought was commercially made letters that I could readily adhere to a base around which I would put a border. So I set about looking. What I found were the children's plastic alphabet letters (often sold with magnets in them). I mounted the appropriate letters on a masonite board and built a border around the letters. I felt the letters stood too high and would create too deep a pattern. An attempt was made to fill around the letters but this was not too successful so the method was scrapped.

Not too long after this I required a new stamp for the office. While instructing my secretary of my requirements it occurred to me that it might be possible to get the stamp maker to prepare the lettering I required for my locomotive name plate pattern. So off I went to the stamp maker.

As my request was unusual and the purpose for which it was required interested him he took the task on with enthusiasm. He made prototypes from a couple of different materials. After examining these prototypes we settled on the standard stamp rubber (A) as the harder materials had all bowed and it appeared would be difficult to flatten without risk of tearing or breaking.

The stamp rubber was then washed and powdered to reduce its stickiness. Next it was glued, using 5-minute Araldite®, to a piece of Masonite® (B). The Masonite was shaped and smoothed (C). Any pits between the stamp rubber and Masonite were filled with glue or putty and smoothed. The final product was taken to the foundry for casting in bronze (D). The raised border and lettering was sanded, cleaned and polished (E). The background colour was applied and the nameplate is ready for use (F).

When I returned to the stamp maker to have my next name plate pattern created, I was informed that the owner was on an extended holiday, however they all remembered the job and were prepared to do another one in the owners absence. However, disaster struck — for despite leaving the original, and detailed, written instructions of what I required they produced the two name plate patterns in the negative, i.e., the manner in which stamps are normally made. If such had been used as a pattern the name and its letters would all have been back to front. So if you choose to use this method, stress to the stamp maker that you *do not* want the negative form of the word.



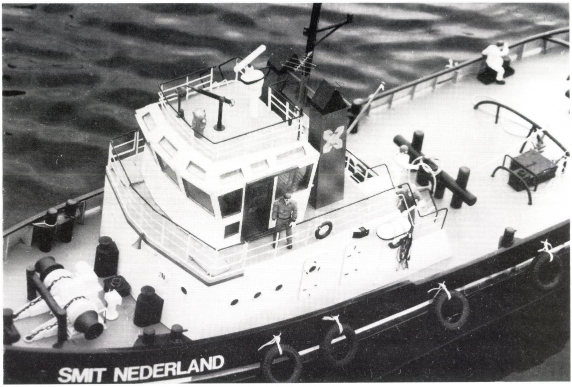
Smit Nederland

by Andrew Thompson

Model boats and aircraft have been my interest since I was six years old. Now over 40, I make models professionally — mainly architectural. I have been working on a range of nostalgic airline models from the 40s to the present day. These will be made for collectors, numbered and certified. I have made the originals from which the moulds will be produced.

I am also working for a client who will, in a few years time, exhibit a maritime display of ships through the years. He has 20 already, with an average length of six feet.

I have built a 6ft model of Costeau's *Calypso* for him and I am building a model of the *Titanic* — the centrepiece of the display. It is fully detailed and fully lit, and 12 feet long!



The Smit Nederland

The *Smit Nederland*

The Smit Nederland, was scratch-built to a scale of 1⁄20, making it about 5ft long. The model has a number of working features including Becker rudders and Kort nozzles as on the full-size counterpart. This coupled with an automatic reversing of the inside motor, on full stick throw, allows the tug to spin on its own axis and step sideways.

Other features include: rotating radar; wheelhouse fire monitor pumps water through hull and rotates; four deck fire monitors also work. Two air horns (modified to a lower note), full lighting for night runs, working rear towing winch. Coupled with an extending salvage hook it can pick up a disabled boat (or branches, plastic bags and other rubbish from the lake).

A wave with a wash

The forward deck hand waves to the crowd on command. This has proved to be a great feature as you can really get kids attention around the edge of the lake — they actually stand and wave back. Then I squirt them with the fire monitor. It's been very popular as on most Sundays the kids line up to be hosed down!

The power plant

The boat is powered by two 12vdc Ford fan motors driving 4" 4-bladed props through a 3:1 gear ratio. They drive the boat at a good scale speed with heaps of grunt. It can push our club dinghy with two adults in, sideways across the lake!

It has a home made speed controller capable of handling 100 amps, uses a full size car battery (37 amp/hour) and I have run all day at displays on one charge.

The hull

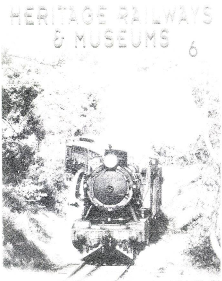
The hull is made from fibreglass over a foam core. The deck and bulwarks are also fibreglass with styrene sheet for the superstructure as I think this best simulates steel.

I made the deck so it lifts off like a huge saucepan lid. It has a leather washer all round the edge to make it waterproof — I have run several times in very heavy rain, and they say golfers are mad!

The boat is very robust and reliable and in nearly five years I have never been unable to run due to a problem.

Product Reviews

Guide to Australian Heritage Railways and Museums 6th edition



This useful touring and research guide hasn't been around for a couple of years. In an effort to make the guide more user-friendly this latest release has gone away from the magazine look of earlier releases and become a 150 page soft cover book!

The Australian Railway Historical Society NSW Division have produced a valuable tool for model engineers to locate the prototype of their pet project or just a place to browse through history for that "inspiration".

The 6th edition lists 17 mainline tour operators; 65 tourist railways; 31 railway museums; 17 tourist tramways and museums; 24 railway heritage sites; 33 local history museums with railway themes; and 5 heritage rail walks. The booklet has historical background and 41 regional maps. The volume is liberally laced with colour and B/W photographs.

The 250mm x 175mm book will fit easily into the glovebox to take on your inter-club visits there may be an interesting rail heritage site on the way.

The entries are listed in regional areas within each state. The entries contain some or all of the following headings: Locomotives; Operating Locomotives; Rolling Stock; Operation; Facilities; Admission; Location; Public transport; and Contact details.

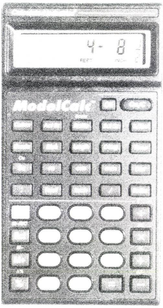
Price: RRP $16.95

Available from: most newsagents, bookshops and hobby shops or direct from AHRS, 67 Renwick St, Redfern, 2016.

Brian Carter

ModelCalc™ — A conversion calculator specially designed for model engineers

Clive Huggan reviews a product he'd been praying for...



There you are, at the work-bench, elbow-deep in swarf. You want to convert dimensions from a drawing to your scale. A computer with Tom Hulse's programming is available, but it's upstairs. What can you use?

Until very recently, the best thing was a calculator with memory. You key in your modelling ratio — such as 0.0833 for a scale of 1 inch to the foot — add it to memory, then multiply each dimension by the [recall memory] key. If the dimension happens to be 26'7$\frac{5}{16}$", there are a few extra keystrokes — 18 in all — while you convert it all to decimal inches. And unless you have a calculator with more than one memory, you have to write down the number of inches in 26'7", or the decimal for $\frac{5}{16}$". That's because the memory is taken up by your scale ratio. Finally, you have to round the result, or perhaps recalculate fractions of an inch.

Over the years, many of us have prayed for a calculator that would allow us to key in feet-and-inches and achieve simple conversions between imperial and metric.

Well, all things technological seem to come to those who grow old enough — and so it is with an excellent new calculator that has just appeared on the market. Called *ModelCalc*, it's specially designed to do what model engineers — in fact model makers of all scales — have been looking for.

ModelCalc has 22 pre-set model scale ratios. When you switch it on, you choose one. If your scale isn't there, you can key in your own ratio. Four such "custom ratios" can be stored permanently — very handy if you're using an unusual scale, like the 2.0714" to the foot that Melanie Dennis and Eddie Mol are using for their Australian Standard Garratts! Whether you use a standard or custom ratio, you simply select it when you switch on the calculator; you don't need to keep recalling it as you would with a number stored in memory.

Using ModelCalc to do the calculation I mentioned earlier is simple. You key the dimensions in virtually as you would write them down: that is, 26 and hit the [foot] key, then 7 and hit the [inch] key, then 5 [/] 16. Then you hit the [Actual size] key followed by the [Scale size] key. The answer is displayed in feet, inches and fractions of an inch: more about fractions later.

If instead of feet-and-inches you want the dimension in inches and fractions only, you press an [inch] key. If you want it in decimal inches you press the same key a second time. That's particularly useful for the smaller ranges of dimensions, where you want to read a full-sized dimension off a drawing and have the miniature figure in thou for the lathe or mill. If you want the answer in metric you press a [mm] or [cm] or [m] key instead. If you key in a full-sized dimension in decimal inches, the answer will be first displayed in decimal inches, and similarly for metrics.

You can key in mixed dimensions too — such as sixteenths and eighths; or feet, inches and metres.

You can set the calculator to choose whether you want fractions rounded to the nearest 64th, 32nd, 16th, 8th, quarter or half inch, or the lowest common denominator, which is extremely useful.

To do imperial-metric conversions is simple: to convert 36mm to inches, for example, you would key 36 [mm] [=] [inch]. The answer will be in fractions or decimal inches, as you have specified, and rounded if required.

The ModelCalc can also do standard mathematical calculations. The booklet that comes with it has a handy section giving formulae for area and volume calculations, and right angle and circular solutions. It has also been designed to simplify calculations of curvature and gradients.

Have you ever wanted to know the scale or actual speed at which your loco, traction engine or boat has travelled between two points? ModelCalc makes that very easy too.

I'm very impressed by the design of ModelCalc. It has a rugged case, well spaced keys, a clear LCD display and a steel back that lets you put it on a piece of magnetized rubber, just where you need it above the bench or lathe. It has a "paperless tape" feature to check back on your entries, too.

Even more impressive is the thought that has gone into the calculations this machine will perform. Its designers have obviously done their homework well, thoroughly investigating the needs of model-makers. When you read the brochure about the makers' full range of calculators you can see why: they produce specialized calculators for woodworkers, builders, financial advisers, quality controllers, surveyors, electricians, plumbers, real estate agents, graphic artists and others. And they produce plan measuring devices for dimensional take-offs.

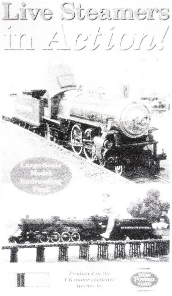
ModelCalc comes in a plastic wallet, the back of which is magnetized rubber to which the back of the calculator adheres. A leather pouch is also offered, but most model engineers will prefer to keep the oil and grime out with a small press-seal plastic bag. The instruction booklet is comprehensive, although the lack of an index is a disadvantage.

You might think from my enthusiasm that I owned shares in the company. I wish I did!

Price: RRP $140

Available from: LB Model Railways, 46 Oaklands Ave, Ballina, NSW, 2478. Phone (066) 86 2671, Fax (066) 86 7726.

Live Steamers in Action!



In October 1994 the Riverside Live Steamers of California USA had their Autumn open house on their Hunter Park track. The railway caters for 1" and 1½" scale trains. Most of this video is of the 1½" scale system.

There are plenty of scale rolling stock items attached to trains which is a trend that is taking off in Australia.

Most of the video is well photographed — there are a couple of rough patches, but they pass quickly.

Some of the locomotives featured include an unusual 4-10-0 with its bright side rods flashing around against its black wheels, a delightful 4-4-2 Atlantic (featured on the video cover) that had been shown in banks and other display venues for ten years before having a fire lit in the firebox! Another good loco is a coal fired 4-8-4 Northern with a "steam boat" sounding whistle.

A diversion from the locomotives is a steam powered crane that was being used to transfer gravel from a gondola to a stockpile beside the tracks.

The video is well narrated with the technical details of some of the models. The only downside was the narrator sounds like he had just come from a day of narrating golf!

There is a also a complete lap of the track with the camera mounted on a flat car ahead of the loco which was interesting. Some of the background noises include 1" to the foot scale Santa Fe diesel locomotives.

There are plenty of closeups of the locomotives in operation.

All-in-all an entertaining 57 minutes of live steam activities in sunny California.

Price: $58.50

Available from: Series 567 Rail Video, PO Box 554, Sunshine, Victoria, 3020. Phone (03) 9312 4181, Fax (03) 9311 3480.

Brian Carter

Victorian Railways T wagon kit

This is a 1" scale, 5" gauge kit of a 1909 15 ton VR T wagon (4-wheel version). The 15ft wheelbase wagon was numbered T192 to 417.

All the material to construct the basic T wagon was supplied in the kit. The kit included all nuts, bolts and screws to assemble the wagon. The sheet steel roof was already rolled to shape. The wagon sides and ends are fibreglass panels simulating the original timber construction. Axle and frame steel is also supplied.

Castings: the wheels, axleboxes and buffers are good quality bronze castings that take only minimal machining ti finish the rough castings. However, I think that bronze axlebox castings are a bit overboard when good cast iron would keep costs reasonable. [*The bronze castings were the same price and better quality material and finish than cast iron.... Model Engineering Supplies*].

W irons: the four W irons need only minimal clean up prior to frame assembly.

Buffers: bronze castings are supplied with steel and springs to complete the four required.

Frames: Square steel tube is supplied and cut to size. A light clean-up is all that is required. It would be a good idea to check to steel for staightness as the ones supplied were slightly bent after cutting.

Only one bad point here, the side frames did not extend the full length of the sub-floor — they fall short of the end sills by about 6mm. I extended my side frames to meet the sills as intended, to give better support for the couplings and headstocks.

Couplers: the kit is supplied with a hook and chain coupler. It would improve the kit if the builder had a choice of hook or automatic coupling. A very simple box could be mounted under the floor sill to accomodate the draft gear for an automatic coupler.

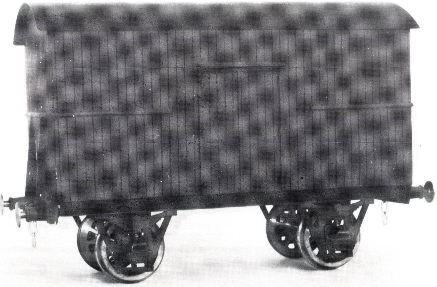
Drawings: The drawings supplied are simple to read and follow. An excellent basic wagon can be constructed. It is then up to the builder to add the extra bits-and-pieces if so desired — e.g. operating brakes, brake hoses etc., to dress up the wagon.

I was very pleased with the product as supplied and look forward to further additions to the rolling stock used by the Victorian Railways in the good-old-days.

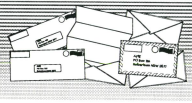
Price: Kit $250;
Assembled (unpainted) $500.

Available from: Model Engineering Supplies Pty. Ltd. 7 Reeves Close, Tullamarine, Victoria, 3043. Phone (03) 9338 7368.
Fax (03) 9330 0840

Erik Hagen



Letter Box



Annual Blowfly Rally

Sir,

Maybe you are building, or hope to build a Blowfly, well then Mudgee is the place to be on the weekend of 9, 10 August. Come and enjoy another fun weekend, either just running and showing your locomotive, or take part in several trials for both driver and locomotive that will test your skills.

Morning and afternoon teas will be available, lunch on both days and a barbeque on Saturday evening. Some on-site facilities for camping and caravans, for any additional accommodation contact the Mudgee Visitors Centre on (063) 725 875 — but be early!

Runs commence Friday night. Don't forget to bring your boiler certificate, AALS rules apply. Even if you haven't got a *Blowfly* you are welcome to come and have a run with us over the weekend on our 518 metres of 3½" and 5" ground level track.

Please let us know if you are joining us by registering early (1 August). Contact the organising secretary John Oliver during business hours on (fax and phone number) (068) 45 2557 or after hours on (068) 45 2018 or email (jandp@crt.net.au). Postal address is PO Box 310, Wellington. 2820.

John Oliver
New South Wales

Gas Furnaces

Dear Sir

Re furnace article, page 36 of AME No 72

As a model engineer who "plays with fire" both as a hobby and professionally, I believe a further word of warning, over and above Allan's reminder that gas is not to be treated lightly, is needed for any one contemplating a gas fired home furnace. A furnace as described may fail to meet the requirements of the Australian Gas Association AG501 code for industrial and commercial gas fired appliances.

The only gas devices excluded from the code requirements are listed in section 1.1.2

Exclusions from the code

The following appliances are excluded from this code:

(a) Manually operated bunsen type burners

(b) Simple ring type burners which are not fitted into a combustion chamber and burn in an open ventilated space under control of an operator.

(c) Engines other than stationery engines.

Clause 1.2.4 allows for "unusual installations" provided they are approved by the gas authority.

At the very least a flame failure device and appropriate gas shut off valves are likely to be needed. While there are provisions within the code to delete flame safeguard sytems they have to be treated each on their own merits. As the blower used in the article would not have the capacity to blow air back into the LPG bottle, it is unlikely that the flash back arrestor actually improves safety in this case. When connected to a low pressure mains supply, there may be requirement for some form of back flow preventer. In essence, the code needs to be considered for each specific application.

While I suppose that we still have the basic right to happily blow ourselves up in the privacy of our own back yard, the duty of care that we all have to other people doesn't allow us to take them with us. We need to be aware of and make use of the industry agreed practices if we hope to have any protection in law should an accident occur.

Bryan Homann
South Australia

E-mail group

Sir,

I wish to ask, through this forum, for people who have an e-mail address to contact me if they would like to join a "group" of live steamers who are "connected". There are about 20 people who are already connected, but I think more would make it better. The group called COALS (Conversations Of Australian Live Steamers) is basically a round table discussion session on model engineering topics.

The opportunity exists here for a coherent effort in presentation, which will hopefully serve several purposes. As the hobby in Australia has gone through the process of unifying itself in a very special way, so it deserves to be well presented to the rest of the world. I see the possibility of a structured world wide web presence, with information available about codes, clubs, technical information, rapid communication of important information, special interest discussion groups (I am thinking of a signalling group in particular!), and other facets. Potential overseas visitors in particular might be glad to have such information available in this format.

Rather than take up further space at this time, would those that are interested and able, please contact me at ian_kirby@uow.edu.au (that's an underscore character between my names, not a hyphen!). I will be happy to write an occasional summary of happenings for the magazine, to enable those without computers to "see" a little of what is happening.

To maintain annonymity, the list server is being offered and maintained by Paul Pavlinovich (paulp@ppit.com.au), of Melbourne, who also maintains Steam and Engine (http://www.webmania.com.au/se) a web site which should be in the bookmark list of any Australian live steamer and model engineer with internet access. I would encourage anyone with access to at least have a look.

- To subscribe (connect) to the listserver group:
  To: coals-request@ppit.com.au
  Subject: (leave blank)
  Message: subscribe coals Firstname Lastname
- To send mail to the group;
  To: coals@ppit.com.au
  Subject: (choose something appropriate to the message)
  Message: try to keep it non-political if possible
- To unsubscribe from the listserver group;
  To: coals-request@ppit.com.au
  Subject: (leave blank)
  Message: signoff coals

Ian Kirby
New South Wales

"Locoism"

Sir,

As a continuing subscriber to AME it would be obvious that I approve of the magazine's format. I am personally not a locomotive buff, but never-the-less I have a passing interest in the mechanics used and an interest in steam.

I would venture to suggest my main interest is in marine and stationary steam, along with caloric/hot air engines. Also, I found the article *A Design for an Ocean-going Tug* in the May-June 1997 issue most receptive and quite interesting as doubtless many readers did. I was disapointed however, as the description of the construction of the two recommended engines had been omitted and it seems the article is not to be continued.

To follow only one discipline in a model engineering magazine such as ours would not only be one-eyed but downright selfish.

May I be so bold as to humbly draw attention to AME in which locomotive books, videos and calendars etc., are in abundance. This to my mind reeks of "Locoism", as we of other disciplines are forgotten. It's of no great importance but I think deserves a mention none-the-less.

Geoff Howarth
New South Wales

Geoff, your comments were well received at the AME office. The tug-boat arti-

cles were all I had available, I was more concerned that the overall shape of the hull and superstructre were useful to modellers than the engine. There are many published engine designs available that could power the tug, a suitable engine was mentioned. at the end of the article.

As for AME Retail, our initial direct contact with readers were at events catering for locomotives only, so a stock was built up for the purpose. Following your advice we will look for suitable non-loco items for sale. The drawings for Leigh Adam's ***Golden Arrow*** *are now available through AME retail. Anyone got any suggestions for non-loco products?... bmc*

An alternative measuring device

Sir,

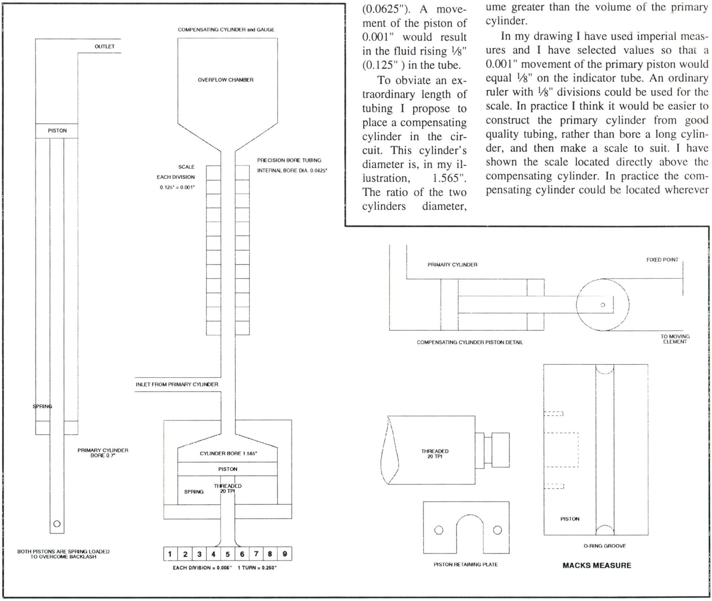
I have just finished reading the article in the Jan-Feb. issue of AME about the MPS units. They are a desirable piece of equipment but beyond my limited means. I have devised an alternative approach which I think any model engineer could construct. It is not as instantaneous as the MPS units but should still do the job. I must point out that this is purely theoretical as I have not yet built one. Unfortunately I am not competent to write an article but I offer these ideas for others to assess and perhaps, if they think the idea is sound, they could provide an article to guide other modellers.

My background is an electrical fitter (5 years apprenticeship). After 18 years in this trade I moved in to electronics for the next 30 years. When I looked for an alternative for the MPS units I turned to hydraulics and mechanical means. No power, no batteries, no electronics. It is a unit that will not be affected by swarf or coolant.

What I propose is a cylinder with a spring-loaded piston. The length of the cylinder will be determined by the users requirements. If this cylinder is filled with a liquid and connected to a precision bore glass tube then the distance the fluid rises in the tube is equal to the distance the piston moves multiplied by the square of the ratio of the two diameters. i.e. For a cylinder of 0.700" diameter and a tube of 1⁄16" (0.0625"). A movement of the piston of 0.001" would result in the fluid rising ⅛" (0.125") in the tube.

To obviate an extraordinary length of tubing I propose to place a compensating cylinder in the circuit. This cylinder's diameter is, in my illustration, 1.565". The ratio of the two cylinders diameter, squared, (1.565"/0.7") squared = 5. This ratio may have to be varied when using other cylinder and tube diameters and when using metric dimensions. The piston of the compensating cylinder, again spring loaded to obviate backlash, is moved by a 20 TPI threaded shaft (⅜ BSF or ½ NF/SAE). This piston will then travel 0.05" for every turn of the shaft. This is equal to the primary piston travelling 0.25". If a 2" disk or knob is attached to the shaft and 50 divisions marked around the circumference each mark would be approximately ⅛" apart and each division would represent 0.005" travel of the primary piston. If you are lucky and have a 40 TPI tap and die then much finer adjustments could be made. The length of the compensating cylinder is reduced by the same ratio, that is a 10.00" primary piston movement requires only a 2" movement of the compensating piston. The fluid medium could be soluble oil. The cylinders could be made from any available material: brass, steel, plastic or aluminium. The pistons could be made of plastic (nylon etc.) and the seal or piston ring could be a O-ring. The top of the precision bore tube would need to be connected to an expansion or overflow chamber of a volume greater than the volume of the primary cylinder.

In my drawing I have used imperial measures and I have selected values so that a 0.001" movement of the primary piston would equal ⅛" on the indicator tube. An ordinary ruler with ⅛" divisions could be used for the scale. In practice I think it would be easier to construct the primary cylinder from good quality tubing, rather than bore a long cylinder, and then make a scale to suit. I have shown the scale located directly above the compensating cylinder. In practice the compensating cylinder could be located wherever



MACKS MEASURE

it is convenient and the scale placed in a position where it can be best observed.

The one necessity is that no airlocks or bubbles form in the system. The top of the bore of the compensating cylinder is coned to prevent air locks forming in this cylinder and the positioning of the outlet of the primary cylinder must be arranged to prevent air locks forming.

As I envisage it at start-up, the compensating cylinder and primary cylinder would both be set to their minimum volume. Fluid would be admitted to the system via the overflow chamber and then the primary piston would be gradually moved to its fullest extent. The system would be topped up until the fluid was halfway up the scale. The lathe tool would be positioned at the start of the cut and the compensating cylinder adjusted first to bring the fluid back to centre scale then further adjusted depending on the length of the cut. So many full turns and so many divisions and the final few thou read off the scale. When the cut is finished the fluid would be back at centre scale plus or minus the final few divisions on the scale to make the final dimension.

The primary cylinder could be fixed to the lathe bed and the piston attached to the saddle by varying lengths of fine wire cable, depending on the position of the saddle. Another approach would be to have a pulley attached to the primary piston rod and a cable passing over the pulley with one end of the cable anchored to the lathe bed and the other attached to the saddle. This would give twice the length of travel for the same cylinder length but it would halve the resolution. The precision tube could be backlit to help older eyes to read the unit (my one concession to electrics). I have not costed this but I expect that with a model engineer's ingenuity and a good scrap box it should be possible to make two units for the lathe and three for the milling machine for less than the price of one MPS unit.

I would like to share this idea with other modellers and perhaps it will stimulate others who may refine my ideas or else rebut them and convince me to stick to my trade.

C.F. Mackintosh.
South Australia

My MPS unit is dry, instantly available, instantly switchable from imperial to metric and back again. I can zero the reading instantly at any position. The digital display is large and easy to see. I purchased the MPS ***because*** *of its cost and ease of use. However, if someone wanted to have a go at Mr. Mackintosh's proposal I am sure our readers would be interested in the results... bmc.*

Frank Fitzgerald

Sir,

I was saddened at the anouncement of the death of Francis "Frank" Joseph Fitzgerald on 25 January 1997 after a long battle with cancer. He was a member of the Western Distict Live Steamers at Fairfield in NSW. Frank was known to few, but better known as the builder of the magnificent scratch-built NSWGR 5723 class 4-8-2 in 7¼" gauge. When asked how long it had taken him to build he would just smile and say that he started it after the war but he never said which war! Frank had worked on the railways as a 57 class fireman on freight trains out of Enfield. At one time he called his engine his dream engine. He will be sadly missed.

Mark Carney
New South Wales

Centrefold

Sir,

Why is it that readers of the majority of "other" magazines are treated to such things in the centre of their magazine called "centrefolds"? Living in the far north as do many other modellers plus those who live in many other remote areas. It would surely be a treat to see a pic of the models that we don't see across Australia, spread across the centre pages of AME — vital statistics included of course.

Roger Anderson
North Queensland

I don't know which "other" magazines you are refering to Roger. I've never seen a centrefold in another model engineering magazine. However, if you look at the centre pages of AME issue 57, November-December 1994, you will see a full-colour centre spread of the 15"g Tasmanian Garratt. I believe this was the first and only time a centrefold has been done in model engineering. I don't intend to repeat it as the there was zero response to that particular effort.

How about a picture of a nicely proportioned, and unpainted (nude), loco as a "metal of the month" centrefold... bmc

Centaur gas engine

Sir,

Some time ago I completed a model of Edgar Westbury's Centaur Gas Engine. It is complete in all respects according his design for 1½" bore by 2" stroke.

When running, the engine vibrates very badly. Has anyone else encountered this problem and if so have they found a solution? I would be grateful for some advice.

Peter Wilkinson
Queensland

Balanced slide valves

Sir,

I have just finished reading part two of the article about Ross Bishop-Wear's 2½" scale Fowler locomotive (AME issue 70). I would like to congratulate Ross on a magnificent effort — a wonderful job!

However, his remarks on balanced valves suggest that he is less than pleased with either the theory or their practical performance; and it is on this aspect that I would like to offer a few remarks.

I have built several steam locos over the years, and am convinced of the merit of balanced valves since so equipping my first one. It enabled me to move the reversing lever (Johnson bar) quite easily while under full regulator pressure — a feature quite impossible with the standard unbalanced valves. This would seem to indicate that the effort to drive the valve gear had been substantially reduced. Nor did the system suffer any steam leaks.

I must confess I am not familiar with the type of balanced valve described and illustrated by Ross in the article. My own "design" uses a simple Viton O-ring mounted on a truncated cone. The O-ring seals against the underside of the steam chest cover, an of course, incorporating a hole through the cone connecting with the valve cavity.

On the theory side, judging by the illustraion (fig. 4) in his article, it may be that Ross has fallen into the familiar trap — to assume that the downward force on the valve is equal to the steam chest pressure times the total valve area — it is not! The force on the valve is equal to the pressure times the area of the valve cavity — this is the area that is normally at atmospheric pressure via the exhaust port and blast nozzle. It is this area that should be balanced — not the whole area of the valve. Blancing involves (in my case) an O-ring, with an internal area of 85 - 90% of the valve cavity, seated against the cover.

Since Ross' drawings (fig 4) are marked "not to scale" it is impossible to say from this that the balancing area up against the steam chest cover exceeds that of the valve cavity. If it does exceed it is inevitable that the valve will not seal in the first place — hence the steam leaks!

Geoff Marshall
Queensland

Letters can also be sent by e-mail to:
b.carter@edfac.usyd.edu.au

Letterbox Contributions

Contributions of letters by mail to:
PO Box 136, Robertson, NSW, 2577 or fax to: (02) 9646 1362 are very welcome.

As far as possible, AME is an open forum for all members of our hobby. Therefore, all expressions of fact or opinion — as long as they are not libellous — will be considered for publication.

Please **type or clearly print** your letters, as script is often difficult for the typist to interpret.

The Letterbox is a popular medium of expression, so space is limited. Therefore, letters of 400 words or less will have a better chance of being published.

bmc

News Desk

compiled by Brian Carter

Welcome to another issue of AME. Unfortunately I had a couple of unavoidable personal projects to attend to after I finished the previous issue. This meant that this issue is later than usual. I hope you understand.

Thank you

On behalf of the AME crew I offer my sincere thanks to Robert Fox who recently retired as AME's Back Issues contact. Robert has been carrying out the role since the AME revamp in November 1990.

AME Back Issues are now available from AME Retail.

Please note the changed contacts on the Back Issues Listing and on the AME Crew page.

Calling all 422 builders

If you are having difficulty obtaining the major castings for the 422 loco project, please contact the AME office urgently, even if you had contacted us recently.

Reader's survey

The response to the Reader's Survey that was published in the January-February issue has been outstanding! The AME team sincerely thank all who sent in the form. When we have more information processed I'll provide you with more accurate feedback on the results. In the meantime I can tell you some of the trends of those processed to date:

- About half are not members of clubs,
- The average age is in the high 50s,
- The major interest is locomotives, followed by workshop items, then marine and stationary engines,
- The majority prefer to leave AME as it is, although there is a strong lean for AME to have more beginner and how-to articles.

The above trends will probably change as more surveys are processed. I hope to have the lot completed as soon as I can, but your excellent response to the written component has slowed down the data entry (I'm not complaining — it makes good reading!)

The information has enabled us to have a good look at the future direction of AME and allowed us to adjust our focus to your needs far better than we could have on our own.

Author's Guide

Around 200 readers (so far) ticked the box in the survey requesting an Author's Guide. The easiest (and cheapest) method of getting them out is to include the four page Guide as a pull-out centre section in the September-October issue. We should have some exciting articles after that!

Article preparation

My thanks to John Cummings for taking up the role of Article Preparation Co-ordinator. John will be monitoring the flow of your articles to ensure that they will be prepared for publication as soon as possible.

Thanks to those who responded to the recent call for articles. However, we could do with a few more longer articles to keep the wheels rolling.

As a rough guide it takes about four pages of typed or word processed text (12pt Courier font) to fill one page in AME. It takes about eight handwritten pages to fill one page of AME. Photos and/or sketches spread the words a bit further.

The kind of articles we are really short of fill four or more pages of AME.

Reader's requests

Ted Murrell suggests we try a Reader's Page. A page where ideas, aimed at beginners, are exchanged and new ideas are born. It will take a few contributions to get it started. What do you think?

Information SuperRailway

There has been a few new local club web sites starting up on the internet. Several Oz and NZ clubs now published their information. The following web addresses may be of interest:

- Bankstown Steam Locomotive Society: http://www.accsoft.com.au/~nowcompu/trains/htm
- Bendigo Society of Model Engineers: http://www.hitech.net.au/jhovel/bsme/bsme.htm
- Evandale Light Railway and Steam Society: http://www.vision.net.au/~elrss/
- Hutt Valley Society of Model Engineers: http://www.fileshop.com/personal/clear/steam/
- South Canterbury Model Engineers: http://www.timaru.planet.org.nz/timaru/scmes.html
- Sydney Live Steam Locomotive Society: http://www.pnc.com.au/~wallison/index.html
- Tullamarine Live Steam Society: http://www.netlink.com.au/~rbritt/tlss.htm

See the Letter Box page for details about joining an email-based OZ-NZ model engineering group.

The AME home page is suffering from a severe lack of time to get things organised to send to Joe Hovel to keep it up-to-date. I'll try and sort it out after this issue is finished.

Trade and commercial

Scobie and Glover Sheetmetal Pty. Ltd. Announce that they have 422 class loco axleboxes in stock. They are machined to the drawings published in AME and supplied ready to fit the bearings and end covers. The axlebox is $19.45 ea or $22.45ea with the end cover supplied. Price does not include postage or bearings. The axleboxes could suit most 5" gauge diesel models. Ask them about their easy payment plan.

MICROCRAFT can now be contacted by e-mail: sales@micro.com.au
You can also check out their web page on http://www.micro.com.au

John Podmore — Precision Machining for all Models — is also on e-mail: loco@netconnet.com.au

Clubs in the news

The Tullamarine Society featured in a Melbourne Newspaper recently after the State Government refused to provide funding towards their new Bulla Hill Railway. Despite the setback the Society hopes to open the new railway to the public in September.

Club crawl

The convention article went a bit longer than I had intended, mainly to avoid postage stamp-sized photos. I hoped to include material from the clubs I visited on the way home. To avoid boring the non-club readers I will include the club crawl (including the new Bulla Hill Railway) in the next issue.

New construction project

We should be starting the 5" gauge battery electric tram engine in the next issue. An ideal first-time "quickie" or just "something" for the Grandkids.

Correction

The photo caption of the steam plant on the lower right of page 23 in AME issue 72, May-June 1997, *Maritime Matters*, contains the wrong information. My apologies to George Theodorakis (the owner) and John Hemmens (the builder). The steam plant is actually a Maxwell Hemmens MAX V4 — not a V4 Cheddar as described.

Classifieds

5" Diesel SD75 Union Pacific for sale

- Prof/built 3HP Petrol, cen.clutch disc brake fwd/rev g/box, 12 wheel drive 12 volt power supply in riding truck many extras Best offer Ph Brian White (047) 33 1582.

Wanted Fowler or Burrell

- Traction engine 3" or 4". Model nearly completed considered.
  Ph Bill (07) 3807 2255.

Fay-Gibson Miniature Train for sale

- Tenders are invited for sale of Miniature Train and track. Original miniature train from Fay-Gibson department store in Melbourne. The train (originally steam) comes with approx. 100 metres of track and 3 carriages in need of some restoration. Train is now located at Gol Gol Fisheries NSW on the corner of the Sturt Hwy & Carramar Drive. Ph Max (03) 5024 8613 or Fax (03) 5024 8609.
  PO Box 202, Gol Gol, NSW, 2738.

2" scale Marshall Traction Engine for sale

- Three quarters completed. Full set of plans..TE7 & TE8 and full set of castings. Tender ready for attachment to hornplates. Fire tube boiler - steam tested and the Compound Engine finished. All motion in stainless steel. Smokebox door cast in authentic Marshall insignia and the engine plates etched and finished. Wheels and gearing need completing. Photo supplied. $5500 ono.
  Ph Gordon Wright (07) 3299 7709.

Myford ML7 lathe for sale

- In excellent condition, one careful owner since new fitted with TriLeva speed control and Q.C Gearbox, complete with accessories: 3-jaw s.c. chuck, 4-jaw chuck fixed & moving steadies, 4 tool turret, ver. slide(swivel) 10" faceplate, catch plate, spare backplate, Myford collets 1/16-3/8", Dore boring head, bench mounted with driptray and reversible motor & switch, instruction & parts manual. Can be viewed in Berry NSW. Owner buying a larger machine Price $3000 ono. Ph Dave Price (044) 64 2304.

Douglas shaper for sale

- 10" stroke perfect order ready for work 3 phase, (single phase mtr avail. if required) $950 ono Ph Peter Sayers (02) 9451 4324.

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Locomotive, boilers and diesel body for sale

- 5" 0-6-0 Simplex loco for sale plus 4 extra 4 wheel tender current cert. $5,200. 5" 2 cylinder shay boiler u.s. $3200. Incomplete locomotives. 5" 0-4-0 Hunslet copper boiler $3200. 5" 0-4-0 Kraus 6" steel briggs boiler $3200. 5" "VR" S class diesel. Fibreglass body, engine, hydro, and parts $1900 Contact Kevin (03) 5752 2350.

Quorn Tool and Cutter Grinder for sale

- Plus lots of accessories, little use, mounted on cabinet $2000 ono Alan Brabam (08) 8362 1279

Locomotive parts for sale

- * 1 pair cast six wheel bogies complete with chain drive. Almost ready to run, plus bits & pieces for air brakes $900.
  * 5" dia. wheels made to AALS Narrow gauge standard on NC Lathe using K10 45 material axles & equ bars for Pass bogie. $80 per set.
  * 0-4-0 4 cyl petrol loco suitable to restore $180 ono.
  * Kraft radio gear 1TX, 4RX, 20 servos, all in good condition.
  * 8 drivers plus 4 spoked trailing truck wheels in SG suitable for 520 or 620 type locos $580. Ph Barry Dottore (08) 8263 1766.

Traditional English Traction Engines

- Drawings, castings, accessories for 3" to 6" scale. Complete boilers supplied with pressure certificate. Machining and gear cutting service available. Send £5.00 sterling (or alternately quote credit card number and date of expiry) for catalogue and price list to Live Steam Models. Unit 7, Old Hall Mills, Little Eaton, Derbyshire. DE215DN UK Phone: ISD +44 1332 830811
  Fax: ISD +44 1332 830050.

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5" gauge 3 cyl Shay drawings and castings $600 Ph John (02) 9771 4294

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British Diamond fret saw, as new. Offers? Ph Ken (03) 9337 3907

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Ph Donald (075) 445 8503

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Gauge O Three rail, live steam, electric, etc Ph Bill (03) 9857 6721

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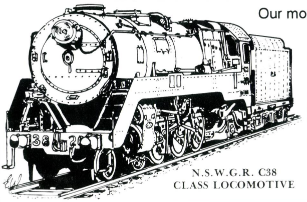
- 5" gauge or larger locomotives (for sale) are not eligible.
- Only one entry per issue.



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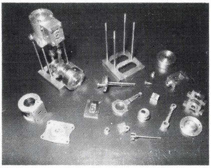

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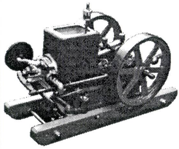

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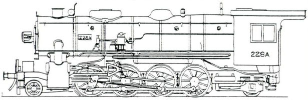

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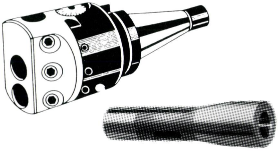

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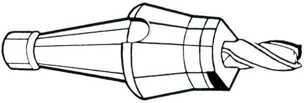

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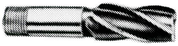

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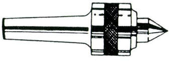

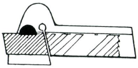

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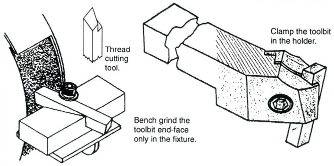
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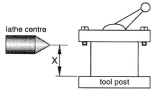

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AMELOCO 14/2	Schematic diagram - Permag Motors in Series (24Vdc)
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